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STARCH PASTE AND INDIGO DYE:

Subsaharan African Inspired Contemporary Textile Designs

By

Kerry L. Maguire ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial
fulfillment of the requirements for the degree of
Master of Arts in Clothing and Textiles

Department of Human Ecology

Edmonton, Alberta
Fall 1995

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Figure 4. Linear Representational Designs (p. 50)

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Edmonton, AB
Canada
T6G 2M8
Tel (403) 492-3824
Fax (403) 492-4821

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June 23, 1995

Kerry Maguire
115 Home Economics Building
University of Alberta
Edmonton, AB
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2025 Italia St.
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Figure 16. Bamun textile (p. 43)
Figure 31. Detail of a Jubilee Design (p. 68)
Figure 85. Hand printed adinkra cloth (p. 124)
Figure 86. Factory produced adinkra cloth (p. 124)
Figure 68. Nsoroma, the adinkra star motif (p. 111)
Figure 104. A Korhogo cloth (p. 159)
Figure 107. A Korhogo cloth (p. 164)
Figure 97. Bokolanfini cloth (p. 146)

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Sincerely,

Kerry Maguire

Kerry Maguire
115 Home Economics Building,
University of Alberta
Edmonton, AB
Canada
T6G 2M8
Tel (403) 492-3824
Fax (403) 492-4821

June 30, 1995

Rafael Palacios
c/o Carmen P. Ramirez
2025 Italia St.
Santurce, PR
00911

Dear Rafael Palacios,

I am a graduate student at the University of Alberta and have completed my Masters thesis in the Department of Human Ecology. In my thesis I have a chapter in which I have described a number of West African textile design techniques. I am writing to obtain permission to include reproductions of the following images found in Into Indigo by C. Polakoff (1980) in my thesis in order to support my descriptions.

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Edmonton, AB
Canada
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THE MUSEUM FOR
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DATE: JUNE 8 1995 FAX: 416-599-2911

TO: KERRY MAGUIRE 115 Home Economics Building U of Alberta

FAX NUMBER: 403-492-4821

From: REGISTRATION DEPARTMENT, COLLECTIONS MANAGEMENT
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Figure 21 Adire Eleko hand-painted design, "Olokun" (pp 11)

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for Susan Barkley marionjohn....

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55 Centre Avenue Toronto Ontario Canada M5G 2H5 (416) 599 5321

May 11, 1995

The Museum for Textiles
55 Centre Avenue
Toronto, Ontario
M5G 2H5
Fax (416) 977-9513

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I am a graduate student at the University of Alberta in the final stages of completing my Masters thesis in the Department of Human Ecology. I am writing to obtain permission to include reproductions of the following images found in From Adire: Indigo Cloth of Nigeria by S. Barkley (1980).

Figure 35. Stencil. "Eniretiati sumakan" (p. 21)
Figure 21. Adire Eleko Hand-painted design, "Olokun" (p. 11)

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Fax (403) 492-4821

May 11, 1995

Institute of African Studies
University of Ibadan
Nigeria

Dear Madame/Sir,

I am a graduate student at the University of Alberta in the final stages of completing my Masters thesis in the Department of Human Ecology. In my thesis I have a chapter in which I describe a number of West African textile design techniques including adire cloth production and I am writing to obtain permission to include reproductions of the following images found in Adire Cloth In Nigeria., edited by J. Barbour & D. Simmonds (1971) to support my descriptions.

Images from "The Origin of Some Adire Designs" by J. Barbour:

Tied and sewn cloth called 'full moon' (p. 59)
Tied and sewn cloth called 'tribal marks with finger' (p. 63)
Diagonally folded cloth (p. 66)
Stencilled cloth with motifs borrowed from 'Ibadan dun' and 'Olokun' (p. 72)
Stencilled cloth called 'keys' (p. 74)
Hand painted 'Ibadan dun' (p. 77)

Image from "The Devolution of the Jubilee Design" by G. Jackson:

Fig. Ib. Detail medallion, cloth in fig. I (p. 90)

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Fax (403) 492-4821

June 23, 1995

Institute of African Studies
University of Ibadan
Nigeria

Dear Madame/Sir,

I am a graduate student at the University of Alberta in the Department of Human Ecology. On May 11, 1995 I wrote to request copyright permission to include reproductions of the following images found in Adire Cloth In Nigeria, edited by J. Barbour & D. Simmonds (1971) in my Master's thesis to support my descriptions.

Images from "The Origin of Some Adire Designs" by J. Barbour:

Tied and sewn cloth called `full moon' (p. 59)
Tied and sewn cloth called `tribal marks with finger' (p. 63)
Diagonally folded cloth (p. 66)
Stencilled cloth with motifs borrowed from `Ibadan dun' and `Olokun' (p. 72)
Stencilled cloth called `keys' (p. 74)
Hand painted `Ibadan dun' (p. 77)

Image from "The Devolution of the Jubilee Design" by G. Jackson:

Fig. Ib. Detail medallion, cloth in fig. I (p. 90)

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Author Zeisel
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Sincerely,

Kerry Maguire

Kerry Maguire
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University of Alberta
Edmonton, AB
Canada
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Fax (403) 492- 4821

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TO:	Kerry Maguire	**PHONE:** **FAX:**	403-492-3824 403-492-4821
FROM:	Allison Wedemeyer	**PHONE:** **FAX:**	(310) 825-9770 (310)206-7007
RE:	Igbo Arts imagery request		
CC:			

Number of pages including cover sheet: 1

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Sincerely,

Allison M Wedemeyer

Allison Wedemeyer

Photography Assistant

May 11, 1995

Museum of Cultural History
University of California,
Los Angeles, California

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Figure 66. Uli (designs) (p. 43)
Figure 67. Body stamps (p. 46)
Figure 97. Textile (ukara) (p. 60)

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Carved bird design on Yoruba wooden door (p. 71)
Carved wooden lizard on Yoruba door (p. 75)
Scraped lizard design on calabash lid (p. 75)
Scraped calabash goat design (p. 79)
Bariba scraped calabash antelope design (p. 79)
Makalanga carved wooden headrest (p. 149)
Carved wooden headrest (p. 149)

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Sincerely

Kerry Maguire
115 Home Economics Building,
University of Alberta
Edmonton, AB
Canada
T6G 2M8
Tel (403) 492-3824
Fax (403) 492-4821

May 30, 1995

Hansjörg Mayer
Haussmannstrasse 200
Postfach 131113
7000 Stuttgart I
Germany

Dear Hansjorg Mayer,

I am a graduate student at the University of Alberta in the final stages of completing my Masters thesis in the Department of Human Ecology. I am writting to obtain permission to include a reproduction of the following image found in Shoowa Design: African Textiles from the Kingdom of Kuba by G. Meurant (1986) in my thesis.

Figure 17 (p. 178)

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Kerry Maguire

Kerry Maguire
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University of Alberta
Edmonton, AB
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Fax (403) 492-4821

Dear Kerry Maguire,

yes you have permission to reproduce fig. 17 (p. 178) in Shoowa Design.

Best wishes

Hansjorg Mayer

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Kerry Maguire

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115 Home Economics Building,
University of Alberta
Edmonton, AB
Canada
T6G 2M8
Tel (403) 492-3824
Fax (403) 492-4821

For the permission you need please contact:

HANSJÖRG MAYER
HAUSSMANNSTRASSE 200
POSTFACH 131113
7000 STUTTGART 1
GERMANY

Tel 0711/282036
Fax 0711/282039

Naomi Pritchard
Picture Research
Thames and Hudson Ltd., London

May 30, 1995

Hansjorg Mayer
Haussmannstrasse 200
Postfach 131113
7000 Stuttgart I
Germany

Dear Hansjorg Mayer,

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Starch Paste and Indigo Dye: Subsaharan African Inspired Contemporary Textile Designs in partial fulfillment of the requirements for the degree of Master of Arts in Clothing and Textiles.

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ABSTRACT

The purpose of this study was to utilize West African starch paste resist and indigo dyeing processes for the production of a collection of contemporary textiles inspired by images derived from Subsaharan African art and craft traditions. The preparatory stages of the study involved the investigation of contemporary textile design, West African textile design techniques, and Subsaharan African designs. The design process, which has been visually documented in the body of the thesis, involved the adaptation of West African starch paste resist and dyeing techniques for the North American studio setting and the interpretation and reconstruction of Subsaharan African imagery.

The study culminated in the production of thirteen large textiles and a written thesis that describes the nature of the design mode of inquiry and documents the development of technical and aesthetic aspects of the textile collection. The thesis identifies visual relationships between the individual textiles produced and further areas for investigation.

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RESEARCH IN DESIGN

Design Mode of Inquiry

> Good design, like good painting, cooking, architecture, or whatever you like, is a manifestation of the capacity of the human spirit to transcend its limitations. It enriches its maker through the experience of creating, and it can enrich the viewer or user who is equipped to respond to what it has to say. (Nelson, 1965 p.13)

Designing is an essential activity of all persons, even though the term "designing" often implies the professional work of architects, engineers, and industrial, apparel, interior, and graphic designers. Pacey (1992) states that design is the process of shaping one's world that involves the participation of **both** non-professional and professional designers. When we choose clothing to wear, when we plan and arrange our homes and gardens, and when we develop simple tools such as a straightened coat hanger to aid in the retrieval of keys locked in the car, we may be engaged in the process of non-professional design.

Implicit in the designer's ability to alter, adapt, and enhance the physical environment are the central ideas of power, freedom, and self-expression.

> Every human being is a designer. Many also earn their living by design - in every field that warrants pause, and careful consideration, between the conceiving of an action and a fashioning of the means to carry it out, and an estimation of its effects. (Potter, 1980, p.13).

In the field of Human Ecology, textile design research is rarely identified as existing within a distinct design mode of inquiry, instead, textile design research is often included within the historical, ethnographic, or ethnohistorical modes of inquiry (Cao, 1994 & Singh, 1989). A review of the nature of research in design has been provided in this thesis in order that the reader can fully understand the design mode of inquiry and the design problem and procedure that this thesis describes.

The design mode of inquiry is an approach to solving aesthetic and technical problems that emphasizes creative and critical thinking. It is a process of experimentation, evaluation, adaptation, and re-evaluation. Potter (1980) describes the manner in which design problems are characteristically approached. He states:

> ...the designer is highly 'problem' conscious; a large part of his work may consist in problem analysis, though rarely of the complex order familiar in the sciences. To an ability for sorting, ordering, and relating information he must bring qualities of judgement and discrimination as much as a lively imagination. (p. 21)

The "judgement and discrimation" that is brought to "sorting, ordering, and relating" is shaped by personal experiences and aesthetic preferences, in combination with existing scientific and technological knowledge. Zeisel (1981) suggests, "Design is difficult to describe because it includes so many intangible elements such as intuition, imagination, and creativity..." (p. 3) and he states that the design process involves three basic activities: imaging, presenting, and testing. Imaging consists of the collection and selection of information relevant to solving the design problem and the visualization of the manner in which the designer might bring that information together. Presenting involves the externalization or communication of the images to viewers. Like all forms of communication, the externalization of visual images may be different from the designs as first visualized, in that designs may evolve during the process of externalization. Finally, testing is the stage in which the externalized images are analyzed, tested, evaluated, and adaptations may be suggested.

The search for ideas which is central to the imaging stage involves the greatest creativity (Zeisel, 1981). The designer begins with a problem to solve and it is through the process of experimentation that a path or direction is suggested or that the image for a design begins to develop. Von Oech (1983), in describing the nature of creative experimentation states:

> Creative thinking requires an attitude that allows you to search for ideas and manipulate your knowledge and experience. With this outlook, you try various approaches, first one, then another, often not getting anywhere. You use crazy, foolish, and impractical ideas as stepping stones to practical new ideas. You break the rules occasionally, and explore for ideas in unusual outside places. In short, by adopting a creative outlook you open yourself up both to new possibilities and to change. (p. 6).

As Von Oech's description implies, the design process may not be linear. In fact, Zeisel uses a spiral (see figure 1) as a metaphor for the design process and suggests that the designer may move through the sequence of imaging, presenting, and testing again and again before arriving at a satisfactory solution to the design problem. He states that:

> A spiral process reflects the following characteristics of design: (1) designers seem to backtrack at certain times - to move away from, rather than toward, the goal of increasing problem resolution; (2) designers repeat a series of activities again and again, resolving new problems with each repetition; and (3) these apparently multidirectional movements together result in one movement directed toward a single action. (Zeisel, 1981, p. 14)

Design problems may be more appropriately considered as consisting of a series of smaller technological and/or aesthetic problems that must be overcome in an attempt to solve the larger problem.

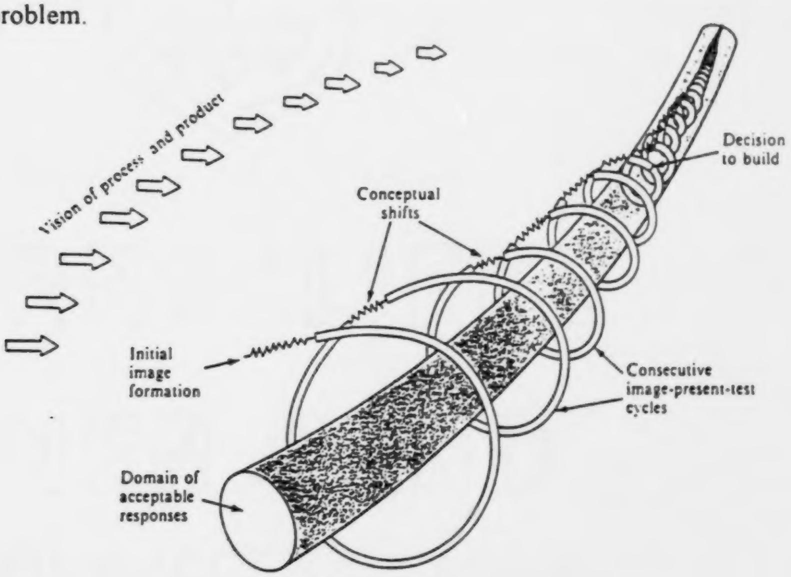
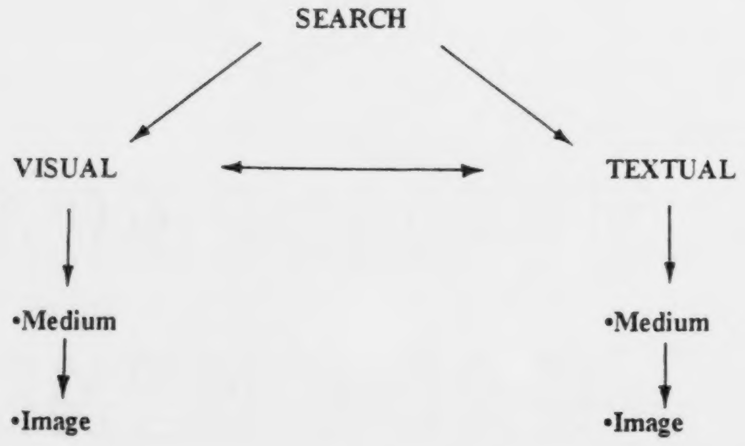

Vision of process and product
Conceptual shifts
Decision to build
Initial image formation
Consecutive image-present-test cycles
Domain of acceptable responses

Figure 1. Design development spiral.

Note. From Inquiry by Design: Tools for Environment-Behavior Research (p.14) by J. Zeisel, 1981, California: Brooks/Cole. Copyright 1981 by Brooks/Cole Publishing Company, a division of International Thomson Publishing Inc., CA 93950. Reprinted with permission.

The Generation of Ideas

The search for solutions to technological and aesthetic problems begins with the search for ideas. The search may be undertaken through investigation of media and of images from both visual and textual perspectives. Visual searching related to the design problem involves the collection of visual materials that the designer sorts, adapts, re-arranges, and re-interprets. Visual searches may also be used to collect data that illustrates the capabilities, limitations, and/or characteristics of the media being considered. Textual searching involves the examination of written sources that describe, instruct, and provide background related to both image and medium. Visual and textual material are continually integrated by the designer as he/she strives to solve technical and aesthetic problems.



The solution of design problems through investigation of visual and textual sources of information may require the designer to apply aspects of ethnographic, historical, and/or scientific modes of inquiry to the search for ideas. These temporarily applied research modes serve to enhance the distinct goals of the design mode of inquiry. For example, textile designers often utilize the results of scientific investigation to guide the technical execution of design projects. Textile designers also utilize the visual documentation, descriptions, and observations of culturally specific textiles, arts, and crafts provided through historic and ethnographic investigation to obtain technical and visual information, which designers apply and adapt for their own aesthetic purposes and technical needs. However, the examination of culturally specific sources to further the creative goals of artists and designers has become a highly charged issue within arts communities. Perrone (1993) states, "Unfortunately, at this moment, there is a school of thought that insists that only members of a particular racial or ethnic group should be allowed to "speak" the meaning of their culture, and that art must solely reflect the identity of its maker," (p.9). Implicit in this view point is a legitimate concern with respect to the use of culturally specific imagery and ideas to "speak for" other cultures and therefore, participate in the representation, commercialization, and exploitation of "less powerful" cultures by the more economically and politically powerful "white western" culture. However, the transmission of design information from one culture to another can also lead to the interpretation and reconstruction of ideas for the creation of designed forms that are expressive of the time and place in which designers live and reflective of the sources of visual and textual information that are available to designers.

The cross-cultural transmission of design information is not a new phenomenon, but is a practice entrenched within the history of textile trade. Harris (1993, p. 10) notes the exchange of textiles throughout China, Japan, Central Asia, India, the Middle East, and Europe by "..a century or so before the Christian era..." when overland routes opened linking the regions together along what is referred to as the "Silk Road". Trade along the silk road has been a significant factor in the transmission of design information. Harris states:

> It goes almost without saying that textile design reflects trading history. Egyptian textiles from the sixth and seventh centuries AD employ motifs borrowed from Persian silks. Many oriental silks are mentioned in medieval European church inventories, and Italian silks of the fourteenth century were clearly infuenced by the motifs on Chinese silks. The influence of the textile trade with India is evident throughout Indonesia, whilst the impact of Indian textiles on European textile design after the setting up of various East India

> Companies is reflected in the many Indo-European motifs which have become part of the textile designer's repertory in the West. (p.10)

Fisher and Wolfthal (1987) note that cross-cultural sources continue to play an important role in contemporary design development and training and that it is important for individuals to begin development as textile designers by grounding themselves in the textile design and visual arts of the past. These authors refer to "China, Japan, India, Egypt, Europe, the Americas; past eras, ancient and recent history throughout all areas of the world" (p.26) as important sources of design inspiration. With respect to the use of cross-cultural sources of design information, the intentions of textile designers may be rooted in a celebration of cultural differences, allowing designers to interpret and express in a visual manner that which is aesthetically interesting and yet foreign. The use of cross-cultural sources of inspiration within the field of textile design and design-at-large may be seen as an expression of the increasingly global nature of contemporary society in which travel and awareness of cultural diversity is commonplace. Just as the silk road served as a link between cultures, modern technology that has enabled communication and interaction with cultures once considered geographically remote has provided designers with a much broader range of available visual and textual information. The use of such reference material is noted as important by Fisher and Wolfthal, who state that a collection of reference materials is central to the textile design process and that:

> Everything we design is the product of mental notations and observations, ideas we have subconsciously recorded from the world around us and which we draw upon when we need them. (p. 30).

Information collected forms the reference materials for technique and imagery development and may only be used as a starting point for idea generation in each area. The reference material might then begin to evolve into personal aesthetic expressions. For the research project I have undertaken, which has resulted in this thesis, I have kept Fisher and Wofthal's approach in mind and have aimed at combining visual and technical knowledge. Visual and textual reference materials from West African textile design techniques and Subsaharan African imagery were integrated with my personal experience and knowledge to produce a collection of contemporary printed textiles. It has not been my purpose to interpret the meanings of design images within Subsaharan African culture, nor to create meaning through the textile imagery I have produced. Also, it is highly improbable that the meaning of imagery derived from African reference material that is symbolic or spiritual in nature will be interpreted in this way among a North American audience. The changing interpretation of symbolic material relative to cultural context is illustrated by Polakoff (1980) who indicates that highly symbolic hand painted cloths with figurative imagery that are produced by the Senufo are sold to tourists as purely decorative objects. Similarly, imagery derived from African reference material will take on a new meaning or may be viewed from a more formal perspective by a North American audience. Therefore, as a North American textile designer, I have produced textiles with the intent of allowing the viewers the opportunity to interpret the imagery according to their personal knowledge and experiences.

Research Problem and Objectives

The Yoruba of Nigeria refer to starch paste resisted cloth as "adire eleko". In West Africa, starch paste is generally developed from a mixture of cassava flour, water, alum, and copper sulfate and is applied to parts of the cloth so that the pasted areas resist the dye. Starch pastes, which are soluble in water, are most suitably combined with short dye baths such as indigo. Multiple immersions in indigo baths result in the rich blue surfaces that have become associated with West African starch paste resist textiles.

The purpose of this study was to use West African starch paste resist textile production techniques and Subsaharan African imagery as reference materials for the design and production of a collection of contemporary textiles. Specifically, the objectives of the study were:

1. To develop imagery inspired by West African paste resist textiles and other art and craft traditions of Subsaharan Africa; and

2. To use the medium of starch paste resist to produce a collection of contemporary North American textiles.

The Significance of the Research

There is a paucity of scholarly research related to the use of Subsaharan Africa as a source of visual stimulation in the field of textile design. This study makes a valuable contribution to the existing body of research that pertains to the documentation of the design process and to the production of contemporary textiles. Furthermore, this study makes a valuable contribution to the literature related to Human Ecology since, "Art as an integral part of everyday life" (American Home Economics Association, 1959) was identified early on as one of the concerns of Human Ecologists working towards the synthesis and application of knowledge from a variety of disciplines leading to the improvement of the quality of lives of families and individuals.

The production of a collection of textiles inspired by the art and craft traditions of Subsaharan Africa and, specifically, the paste resist textiles of West Africa, has implications for other researchers as well. Smith and Eicher (1982) note that the systematic study of African dress and textiles began in the mid-1960s and "has included analytic as well as descriptive material by scholars from many disciplines" (p. 28). This thesis underlines the importance of scholarly examination of African textiles and dress in terms of contemporary western textile design and may aid in directing other designers to the rich visual traditions and culture that are found within the African continent.

LITERATURE REVIEW

In preparation for the research project I have undertaken, I examined textile design research related to the use of cross-cultural reference material as a source of information for contemporary North American textile design and research that specifically utilizes African sources of textile design information. I also conducted a visual review of the work of textile designers and artists who have utilized African sources of visual and technical information. The following section provides a summary of the information obtained from the sources I examined.

Textile Design Research Literature Related to Cross-cultural Reference Material

There have been a number of studies conducted related to the use of cross-cultural sources for the creation of contemporary textiles. The studies which have been examined in developing my research approach have provided important information relative to the value of using cross-cultural sources of design inspiration. The literature shows that a review of historical or cultural textile production techniques and imagery is integral to the execution of a design research project, in addition to a description of how techniques have been adapted to the North American studio setting and discussion of the resulting designs. Through an examination of the available research literature it has become apparent that the inclusion of a theoretical framework related to the design mode of inquiry can serve to link more clearly the reference material to the production of contemporary textiles.

McHaffey (1954) began to establish the importance of cross-cultural reference material to textile design and design in general. She shows that motifs and symbols can be meaningfully adapted on textiles aimed at a contemporary audience. McHaffey's study is significant in that it reviews the historical transmission of a number of motifs through Ancient Egyptian, Greek, Roman, Byzantine, Gothic, and Renaissance periods and, at times, into the 18th, 19th, and 20th centuries. She touches on the influences of Indian, Persian, and Far Eastern cultures on the evolution of design motifs in a wide variety of media. McHaffey's overview includes specific descriptions of the evolution of the lotus, anthemion, acanthus, fret, scroll, rosette, and palm motifs and, in doing so, illustrates the notion that adoption and adaptation of cultural imagery is valid and has been central to the historic evolution of art and design.

Through the use of historic data, McHaffey established that designs derived from cross-cultural sources have been commercially successful. She suggests that such designs will continue to play an important role in contemporary textile design and she collected historic data by documenting textile designs from 1944-1954 through a summary of the textile trends identified in American Fabrics, House and Garden, House Beautiful, and Interiors. In addition, questionnaires which were sent to "35 leading designers and textile firms...including Fortuny, Stroheim and Romain, Laverne Originals, Scalamandre, and Updecor..." (p. 34) confirmed that "traditionally" inspired designs are believed to have a longer life and to be of more commercial value.

McHaffey's study was used as the justification for her production of a collection of predominantly block and screen printed textiles with inspiration derived from cross-cultural sources such as Ancient Peru, Hungary, Africa, Early American culture, India, American Indian culture, Asia, Greece, Guatemala, and Italy. The report of the design mode of inquiry leading to the execution of the textiles in McHaffey's case is extremely minimal and is linked in no other way to the information provided in preliminary sections of the thesis. The images produced do not focus on a theme, but are derived from a wide variety of sources and exist as individual designs rather than as a collection of designs inspired by a common theme and method of production.

Similarly, Fu (1972) provides no discussion of the preliminary stages of the design process and only a brief overview of production methods of contemporary textiles inspired by Chinese symbols and motifs. Even so, Fu does provide extensive visual and written documentation of Chinese images and meaning in an attempt to promote an appreciation for the symbolism that surrounds Chinese imagery. Fu states, "There exists a continuum, or at least some area of intersection, between the aesthetic taste of Ancient Chinese people and that of contemporary western preferences. If this is true, then the adaptation of Chinese art to modern standards will be both possible and artistically valid" (p.3,4). Fu's study did not attempt to evaluate how the symbols identified and used in her textiles were interpreted by the contemporary North American audience and therefore, she did not clearly establish where the aesthetic tastes of Ancient Chinese and contemporary western people meet.

Hester (1970), Muc (1989), Singh (1989), Cao (1994), and Weir (1994) provide documentation of the relationship between the cross-cultural sources of reference material and the development of contemporary North American textile design production by providing descriptions of design production and execution as it relates to the historical and cultural overview completed. Hester utilized Hopi textile motifs as a source of inspiration for the production of contemporary textiles. She employed processes that were non-indigenous to the Hopi people for the production of her textiles including batik, block printing, needlepoint, and silk screening in a contemporary North American studio setting. Muc (1989) used the textile imagery and selected production techniques of Sumatra, Indonesia as a source of inspiration for the production of applied decorative design on handwoven textiles. She also incorporated the use of non-indigenous production techniques including silk screening. Singh (1989) examined the production techniques and imagery of the textiles of Gujarat, India as inspiration and selected the direct painting medium as a process for contemporary textile design exploration. Cao (1994) examined the textiles of Miao women and adapted imagery, process, and tools to the contemporary North American studio setting. Weir (1994) explored the Japanese Shibori process by combining imagery derived from her own experiences within characteristic Japanese panel formats.

Hester, Muc, Singh, Weir, and Cao provided background information related to the production of textiles within each respective culture being examined, often linking process and design with culture and history. Their research reports all indicate that contemporary designs should consist of original designs that are inspired by, but that are not copies of, existing designs within the culture from which reference material has been derived. Cao (1994) addresses issues arising from the use of cultural motifs most directly in his description of the selection of motifs for contemporary designs inspired by the textiles of Miao women. He states:

> This researcher chose mainly geometric motifs to execute textile designs because aesthetic features of geometric motifs including lines, circles, triangles, and their organization are universally accepted and more adaptable to contemporary society. Although many geometric motifs found in Miao textiles have specific meanings ...they all retain other aesthetic features that a Euro-Canadian audience can appreciate. (p.50)

Cao was attempting to draw attention to the notion that the symbolic meanings found on textiles or other artifacts of one culture may disappear or become altered when utilized by designers in another culture and that aesthetic appreciation may exist on more than one level such as the appreciation of form, which refers to interpretation by the viewer of elements and principles used to create a design, as well as content, which refers to the interpretation of ideas or themes that the viewer may derive from the way in which the designer used the elements and principles. It is, therefore, important to acknowledge that when imagery is utilized in new cultural contexts, it may be understood from completely new perspectives. The ultimate "meaning" of the design may exist in terms of formal appreciation **and/or** appreciation of content. The meaning created should be left to the viewers who will bring personal associations and experiences to the interpretation of **both** form and content.

The research of Hester, Muc, Singh, Cao, and Weir who use cultures outside of their own as sources of design information, are important in that they illustrate approaches to cross-cultural textile design research. All provide documentation of design production processes and a critical discussion of the textile collections which they produced. Most significantly, Muc, Singh, Cao, and Weir provide additional analysis related to the aesthetic characteristics of the textiles produced and to the relationship of the textiles as parts of collections. In addition, Weir also noted the value of a visual review of existing textile sources and utilized this as part of the preparatory stages of her research project.

Significant to the body of research literature which I examined is the idea that textile designers need not be restricted to production processes indigenous to the source culture, but that processes may necessarily be adapted to the North American studio setting. For Singh, Muc, and Cao adaptation of processes has meant the use of fibre reactive dyes and for Weir adaptation meant the use of synthetic indigo instead of natural indigo. One of the most significant examples of the application of contemporary tools and materials is Cao's use of computer aided design (CAD) technology during the generation of imagery and the textile designs for his collection. My application of non-indigenous textile production tools and processes is identified in the description of the production of my textile collection.

Also found to be a significant characteristic of the research literature examined is that a description of a mode of inquiry and theoretical framework that serves to provide an orientation to the process has not been clearly identified. Cao (1994) and Weir (1994) touch on ideas of creativity, but neither identify design as a distinct mode of inquiry. Singh (1989) refers specifically to qualitative historical and ethnographic research methods, Muc (1989) also identifies the use of qualitative research methods, and Cao identifies ethnohistorical (both cultural and historic inquiry) methods as his main procedures for inquiry. In each case, subjective decision making is incorporated into discussions of the manner in which preparatory research material will be used in the production of the textile collections.

The research project I have undertaken utilized the design mode of inquiry that at times draws on ethnographic, historical, and scientific methods. It is a mode of inquiry which has been identified and described as a distinct research mode. It is my opinion that the intuitive nature of design does not need to be explained or viewed as a limitation during the application of the research methods, as has been the case in previous studies. Intuition is implicit in the design mode of inquiry.

Textile Design Research Using African Reference Material

Within this section I have specifically summarized the use of African sources of textile design information. I have examined the research of Baudoin (1984), Polakoff (1980), and Dendel (1974). Information provided by Polakoff and Dendel has been particularly important to my research, in that they have been central sources that describe the production processes and characteristics of West African textiles.

The research of Baudoin (1984) is one of few extant examples of scholarly research that derives textile design inspiration from African designs and techniques. Using available literature, Baudoin described the production of textiles within West Africa and adapted the indigenous processes of tie-dye, wax resist, applique, block printing, screen printing, stencilling, and weaving to the North American studio setting. Baudoin provides a brief literature review. The remainder of her research report is organized according to the technique being examined. Baudoin does not indicate whether or not she has examined the textile design and production process of other designers. However, Baudoin does identify the importance of African textile design information to her study. She states that the major points of interest in the research project relate to the techniques of production and the symbolic meanings of the designs. She indicates that both "...are currently used by artisans within certain West African countries, Zaire or Kenya" (p. 5). With African textile design in mind, Baudoin created a collection of textiles from which she produced a number of non-indigenous articles including apparel items, a floor cloth, a pillow cover, and a coverlet. Although Baudoin's description of imagery and technique is complete and she has included documentation of the production processes, there is very limited discussion of original design development and the resulting textile collection appears incohesive and without a theme, consistent production methods, or imagery sources to unify the work. In some instances, motifs appear to have been taken directly from the original source and although the selected processes have been adapted to available materials and technology, Baudoin's thesis does not identify considerations that pertained to the production of the textiles as a collection nor to design as a mode of inquiry.

Polakoff (1980) describes African printing and dyeing techniques at length. Although production of contemporary North American textiles inspired by African textile production processes are briefly discussed, Polakoff provides detailed cultural, historical, and design information that has been essential in guiding the description of West African textile design utilized in the investigation I have completed. The techniques examined by Polakoff included tie-dye, wax and starch paste resist textile production techniques, Ghanian "Adinkra" block printing, and hand painting processes such as the production of mud cloth in Mali and Korhogo cloth in Ivory Coast. Polakoff's research is an important source of visual information which enables the reader to make a visual comparison of and contrast with the results of the variety of textile design techniques described.

Dendel (1974) served as a complimentary source to the information provided by Polakoff in her description of West African textile design techniques and their adaptation to the North American setting. The information I found most relevant to my study included descriptions of block printing, painting, tie-dye, starch paste, and wax resist processes utilized in West Africa and examples of their adaptation by North American textile designers. A significant contribution of Dendel's study is a description of the research of Martin and Brooks who have each experimented with the use of starch paste to produce textiles in North American studio settings. Brooks developed a paste recipe using a mixture of starches including pearl tapioca, cassava starch, rice flour, and gluten flour and Martin developed a paste recipe using more readily available tapioca, cornstarch, and gluten flour as main starch ingredients. Brooks' research has been summarized in the description of the technical processes I undertook for this thesis project.

Review of Textile Design Research in Visual Form

Professional designers characteristically make use of the design solutions generated by their contemporaries to help inform and inspire their own work thus, in addition to the contemporary textile design studies identified in the previous section of this proposal, a search for visual information related to contemporary textiles inspired by Subsaharan African imagery and the textile design traditions of West Africa was also undertaken. A number of key points arising from my visual search for information are discussed in this section.

I have examined a variety of North American manufactured and hand printed textiles intended for consumer consumption (Sokolov, 1991 & Joyce, 1993). In each case, the textiles reference Subsaharan Africa as a source of inspiration through the organization of the designs on the surface of the textiles and the selection of motifs. In contrast to the West African textiles I have viewed, these contemporary North American textiles exhibit the use of a broader palette of colours. For example, one of the textiles I viewed combined an Adinkra-like pattern structure with fluorescent colours which is uncharacteristic of the Adinkra cloth I have viewed. I also found that North American textile designers have re-interpretted or re-constructed selected African motifs and collaged imagery to create new images and arrangements.

Among textiles produced to be viewed as individual pieces of art, I have found the references to Subsaharan African imagery and design to be more understated. For example Matthias (Larsen, 1976) combined paste resist processes with wax resist, tie-dye, and applique. The resulting geometric imagery is barely reminiscent of Subsaharan African designs. Jordan (Fiberarts, 1989) has derived inspiration from Kuba textiles and motifs. These influences have been integrated with the artist's independently developed imagery. Jordan has combined the techniques of silk screen, painting with dyes and pigments, dyeing, bleaching, applique, and stitching to produce a collage of textures, colours, and patterns on cloth that juxtapose in the artists words, "...patterns and fabrics that are otherwise unrelated..." (p. 16).

Unfortunately, I was only able to obtain minimal visual information that illustrates the design work of Brooks or Martin (Dendel, 1974 & Brooks, 1971) who have both worked with starch paste resist specifically and were referred to earlier. Nevertheless, the information avaliable shows imagery that is non-representational or abstract and compositionally oriented as opposed to designed in scaffolding systems. Dendel (p. 132) includes one illustration of Brook's use of starch paste on cotton velvet. The use of cotton velvet, which is widely available in North America, but not in Africa, is an interesting adaptation of materials used with the paste resist technique. As Brooks' work illustrates, starch paste may be an effective resist when applied to cloth that is heavier than the cotton shirting typically used in West Africa for starch paste resist techniques (Idiens, 1980).

Senabu Oloyede, Kikelomo Oladepo, and Niki Olaniyi are contemporary West African textile artists. Their textiles relate to the idea of adaptation of process and imagery. Oloyede and Oladepo use the medium of "adire eleko", but do not use the characteristic West African format which consists of blocks of patterns. They use traditional colours, such as those derived from indigo, and they may incorporate many animal images and motifs that are common to African textiles, but "...their fabrics are tapestries with single compositions rather than patterns with no focal point" (Kennedy, 1971, p. 24).

According to Kennedy, Oloyede depicts scenes of Yoruba life and uses her images to tell stories. Using starch paste on cotton as a medium, Oloyede separates segments of the design to give emphasis to various components of the story, but the divisions exist not to divide the space (as they might with many forms of West African starch paste resisted cloth); instead they lead the viewer from one aspect of the story to the next. Rhythm is used carefully to create a sense of excitement in the scene. Oloyede's purpose is the communication of ideas or meaning unlike commonly produced adire patterns which are more decorative in nature and unlike textiles produced for the North American consumer market. In contrast, Oladepo uses broad, deliberate strokes and in the authors words, she attempts to "...create an impression of breath-taking speed; inspiration and action are one, are simultaneous" (p.26). As described by Kennedy (1971) Oladepo's subject matter is spiritual in nature.

Like Oloyede and Oladepo, Olaniyi is a textile artist from Oshogbo, Nigeria. Her artistic exploration has included investigation of cassava resist dyeing processes typical of West Africa. She has also experimented with the use of wax resist on cotton, and she created a technique of applying wax with a sponge brush and she has "...invented new patterns to suit her own needs and the demands of the medium" (Scott, p. 46). In keeping with Yoruba traditions, she has developed dyes from natural sources such as indigo as opposed to using commercial dyes. Instead of relying on traditional patterns, she has developed reference imagery from dreams, books, myth, history, and observations from everyday life as her inspiration. More recently, Olaniyi has combined indigo dyed stitch resisted and starch paste resisted textiles with characteristic North American piece work and quilted formats (Nike Olaniyi-Davies, n.d.). I feel that the geometry often present in piece work and quilting reinforces the geometric arrangement apparent in many West African textiles. In this way, the combination seems appropriate.

Oloyede, Oladepo, and Olaniyi have used African techniques and in some instances, have adapted those techniques to suit their own needs. They have used sources of inspiration that seem to have personal relevance and have created compositions that are intended to be viewed as individual works of art in contrast to more functional or purely decorative purposes. This is an adaptive approach to an indigenous West African textile tradition.

There appears to be similarities in the adaptive approaches taken by modern African textile designers and contemporary North American textile designers. It is interesting that Oloyede and Oladepo have been able to produce imagery that looks African, but that as I stated earlier is inspired by their own life experiences in terms of compositional structure, and selection of imagery. An approach oriented to the production of textiles resulting from combined influences, as illustrated by the work of Jordan and Matthais, is also an approach taken by North American textile designers. I have explored this idea through adaptation of indigenous West African techniques, materials, and tools and by selecting, and adapting Subsaharan African decorative motifs and pattern structures. I have combined the reconstructed motifs and pattern structures with compositional formats influenced by both Subsaharan African and North American design structures. This process is described more completely in the final section of my thesis.

THE PRELIMINARY SEARCH FOR IDEAS

My search for inspiration in textile design began with the search for visual and textual sources of information. Among the textiles produced throughout the world, I find the textiles of Africa (see figure 2) to be particularly interesting and visually stimulating. For this reason, African arts and crafts were chosen as a focal point for my study. The research process began as a descriptive procedure involving the collection and integration of visual and textual sources of information that relate to West African textile design structures, techniques, and materials. Following this process, West African starch paste was selected as a source medium for exploration. The following is a summary of the technical and visual information I gathered and a discussion of the socio-cultural aspects of textile production and design within West Africa.

The Materials of West African Textile Production: History and Applications

Dendel (1974) in a discussion of African textile arts addresses the spiritual connection which exists between maker and material. She suggests that Africans have a particular ".. talent for sensing "Mana", or spirit, in all materials, as well as in themselves" (p. 13). Dendel suggests that the Mana is an anthropological term that in African culture refers to the manner in which the human and the spiritual are connected. She describes this relationship as a channel through which spiritual forces pass, which can flow from human to material, or from material to human and as a result, it is important that all activities be carried out with the greatest care and purest thought in order to ensure success.

Dendel also discusses the importance of the ability to sense the spiritual in all things and the relevance of this ability to western craftspersons. She states:

> The African way of seeing spirit in all things is perhaps possible to craftsmen even in our overindustrialized society. It places an emphasis on feeling one's energy directed toward and flowing into material. Forming material and shaping it with one's hands is a giving out and a

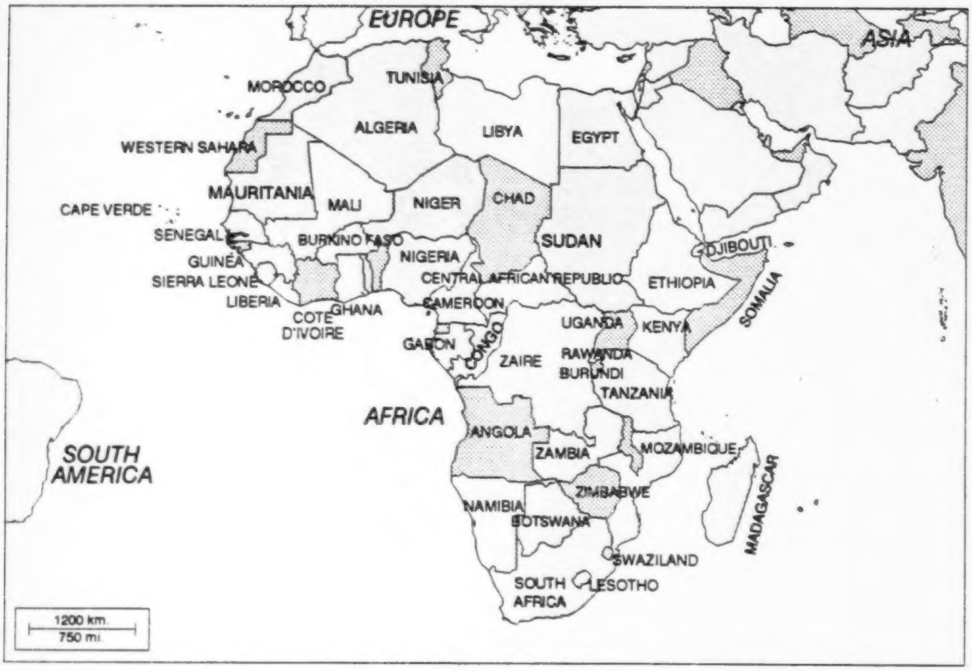

EUROPE
ASIA
MOROCCO
TUNISIA
ALGERIA
LIBYA
EGYPT
WESTERN SAHARA
MAURITANIA
MALI
NIGER
CHAD
CAPE VERDE
SENEGAL
BURKINO FASO
SUDAN
GUINEA
NIGERIA
DJIBOUTI
SIERRA LEONE
CENTRAL AFRICAN REPUBLIC
ETHIOPIA
LIBERIA
CAMEROON
GHANA
COTE D'IVOIRE
UGANDA
KENYA
SOMALIA
GABON
CONGO
ZAIRE
RAWANDA
BURUNDI
TANZANIA
AFRICA
ANGOLA
ZAMBIA
MOZAMBIQUE
SOUTH AMERICA
ZIMBABWE
MADAGASCAR
NAMIBIA
BOTSWANA
SWAZILAND
SOUTH AFRICA
LESOTHO
1200 km.
750 mi.

Figure 2. Political map of Africa
Note. Adapted by K. Maguire from PC Globe Maps 'n' Facts [Computer software], 1993, Novato, CA: Brøderbund Software.

> taking in. More than that. It is a spiritualizing of one's energy through rhythmic motion. (pp.13,14)

Within the North American context, the connection between textile designers and the materials being utilized may refer to the knowledge that results from increasing familiarity with specific materials. Knowledge of materials developed over time provides textile designers with the skill and ability to successfully manipulate those materials. As with the textile designer working in a North American studio setting, the materials that are familiar to the West African textile designer are reflective of the natural resources of the environment and products made available through trade. With respect to textile design techniques, the most important elements of the printing and dyeing process are the cloth to be embellished and the dyes and materials used to accomplish the task.

Nature and Significance of West African Textile Production

Picton and Mack (1989) in a discussion of the raw materials used in the production of African textiles, identify a wide variety of fibre types that are indigenous to the African continent. These include cellulose fibres such as cotton, bast fibres, and raffia, and protein fibres such as wool and silk. Although the authors indicate that each of these fibre types are produced in at least part of West Africa, it is cotton textiles that are most commonly used for printing and dyeing.

Picton and Mack indicate that the production and use of cotton textiles in Subsaharan Africa can be traced to the eleventh century AD, by which time a well developed textile industry existed. Available literature provides little information about the utilization of cotton before this time. Sieber (1972) points to evidence indicating cotton use in Benin by the thirteenth century (A.D.). He suggests that loomed textiles were probably produced before this time. Idiens (1980, p.15) indicates that in more recent times, much of the cotton used for dyeing in West Africa is "factory-made shirting, manufactured in Nigeria, or imported from Britain and Europe, although in remote areas handwoven cloth is still used."

Among historians, the production and wearing of cloth within West Africa (see figures 3 and 4) has cultural significance to historians. For example, Joseph (1978) refers to the connection between the weaving process, the wearing of cloth, and the ability to speak the language within Dogon culture and indicates that among the Yoruba, nakedness is linked to infancy or insanity, while clothing is seen as a sign of maturity and artistic expression. Among the Bamana, production of cotton and loomed textiles is believed to predate sowing of grain, suggesting that cloth production played an essential role in Bamana economic and technological developments.

The relationship between cloth and economic development is also noted by Joseph (1978) who describes the monetary value of cloth in African societies. She indicates that historically, cloth was an important trade item and states that eventually, cotton textiles became a form of currency. Kessler (1984) notes that in Sierre Leone, "gara" (tie-dyed) cloth was used as payment for fines arising from local trials and Aronson (1975) describes how, by the early nineteenth century, cloth was a standard medium of exchange among the Wolof of Gambia and residents of the Cape Verde Islands off the coast of Senegal. According to Aronson, in the past, among cloths traded, dyed and patterned cloth was considered to be most valuable. She states that textiles with the deepest blue-black colour that is obtained by leaving cloth in the indigo vat for up to a week and that are then beaten to create shiny surfaces have received the highest prices in the market places. Aronson does not indicate whether indigo dyed and patterned textiles continue to hold such economic value within West Africa. Joseph expands on the value of dyed and patterned textiles, describing how successive dippings in vats of indigo and the gradually increasing richness and depths of shade obtained resulted in an increase in monetary value assigned to the textiles. "It is the sign of a prosperous man - one who has the resources to buy cloth with enough indigo to colour two robes" (Joseph 1978, p. 35). Joseph reports that for this reason the bluish skin that results from the rubbing off or crocking of dye from over-dyed cotton garments is considered a desirable effect among the Yoruba. Polakoff (1980) implies that in some instances, the crocking of indigo dye is considered to be a

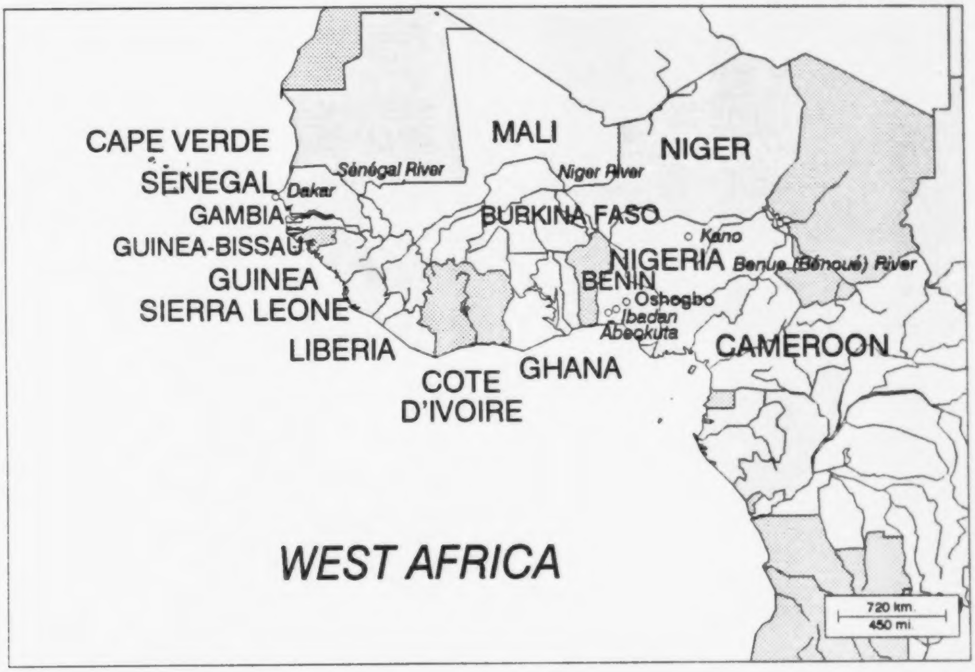

CAPE VERDE
SENEGAL
Dakar
Sénégal River
GAMBIA
GUINEA-BISSAU
GUINEA
SIERRA LEONE
LIBERIA
COTE D'IVOIRE
GHANA
MALI
Niger River
NIGER
BURKINA FASO
Kano
NIGERIA
Benue (Bénoué) River
BENIN
Oshogbo
Ibadan
Abeokuta
CAMEROON
WEST AFRICA
720 km.
450 mi.

Figure 3. Political map of West Africa including identification of relevant cities and rivers.

Note. Adapted by K. Maguire from PC Globe Maps 'n' Facts, [Computer software], 1993, Novato, CA: Brøderbund Software.

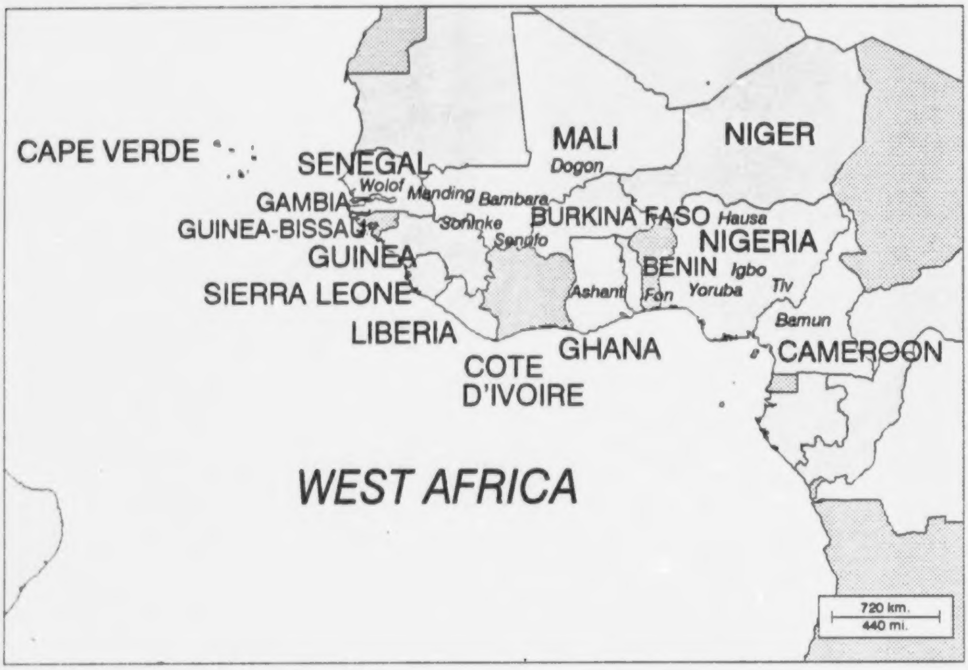

CAPE VERDE
SENEGAL
GAMBIA
GUINEA-BISSAU
GUINEA
SIERRA LEONE
LIBERIA
COTE D'IVOIRE
GHANA
MALI
NIGER
BURKINA FASO
NIGERIA
BENIN
CAMEROON
Wolof
Manding
Bambara
Soninke
Senufo
Dogon
Ashanti
Fon
Yoruba
Igbo
Hausa
Tiv
Bamun
WEST AFRICA
720 km.
440 mi.

Figure 4. Map of West Africa including identification of relevant cultural groups. Note. Adapted by K. Maguire from PC Globe Maps 'n' Facts [Computer Software], 1993, Novato, CA: Brøderbund Software.

test for the "real thing". There is not more current literature that gauges the present values of indigo dyed cloths within West Africa.

Indigo Dyeing in West Africa

Although the literature which I have reviewed describes a wide variety of natural dyes that have been used traditionally in the production of patterned textiles in West Africa, indigo appears to be the dye most widely used. Joseph states, "The rich, deep blue colour obtained from plants containing indican has been used to dye cloth in Africa since the sixteenth century...and probably earlier according to historical reconstruction" (p. 34). Aronson (1975) and Polakoff (1980) concur.

The economic value of indigo dyed and patterned textiles has been previously noted and it is clear that indigo continues to be a valuable dyestuff in West Africa. The wearers of indigo dyed textiles are thought to be prosperous or wealthy individuals and, in this sense, indigo cloth imparts status to the wearer in West Africa. In Joseph's (1978) discussion of the importance of indigo among the Yoruba, she indicates that, in addition to its use on textiles, indigo is sometimes used to colour the wood of sculptures. In representations of the "trickster spirit Eshu", cowrie strands and the dyed surfaces of the wood are valuable offerings. Indigo is also rubbed into carvings that ornament royal palaces. In these instances, application of a costly and valuable substance such as indigo to the wood of sculptures implies aristocracy and "is an appropriate offering on the part of humble devotees" (p.35).

Lavishly indigo dyed turbans worn by the Hausa are also considered to be demonstrations of status and prosperity. Joseph describes the production of dark blue-black cloths, indicating that the surfaces of the Hausa textiles are pounded and, in some instances excess dye is rubbed into the surfaces for maximum effect. Indigo dyed Hausa headdresses indicate that the wearer is prosperous and distinguished. In the same way, the indigo resist dyed shawls worn only by the eldest women of the Northern Edo in Nigeria indicate status and wealth in that through the wearer's lifetime, they have accumulated the financial resources to purchase such cloths.

Joseph indicates, in this way, the women become "...members of an exclusive association." (p. 36)

As the previous examples demonstrate, indigo dyed textiles are culturally and economicly important in West Africa and therefore, indigo dyeing is considered an important activity. Within West Africa indigo dyeing is predominantly a female practice, with dye knowledge being passed from mother to daughter or through female relatives. Joseph (1978) indicates that this is the norm throughout most of West Africa, "...except among the Hausa, where it is a commercial-scale industry, among the Tiv, and groups in the Cameroon Grasslands..." (p. 34). Barbour (1971) in her discussion of the production of adire cloth in Nigeria suggests that in this region there is generally a division of labour in the production of patterned textiles. Women participate in the most time consuming tasks such as sewing, tying, and free hand painting while men practise quick methods of textile preparation that they have probably developed, such as machine stitching and stencilling. Dendel (1974) suggests that among the Yoruba, textile dyeing is a home industry and that women often supervise children while they prepare the cloth for dyeing. Stanfield (1971) describes how, among the Yoruba, some craftspeople work in their residences while others work in large compounds among men, women, and children who contribute cooperatively to produce the textiles.

Joseph (1978) suggests that although there has been no examination of the perceived power that African indigo dyers may possess, among many groups, indigo vats are seen as sacred and ritual actions surround the vats' preparation. Once a vat has been prepared, Joseph states that, traditionally, restriction of activities or behaviour, existed while dyeing was in process. Abstention from sexual relations is an example of such a restriction. Both Joseph and Polakoff (1971) state that, in Liberia, men are not permitted near the dye vats and Joseph expands on the idea of female domain by indicating that among the Yoruba, the spirit, "Iya Mapo", is believed to be the protector of women's trades. Women worship this spirit and bring gifts of food in order to ensure successful dyeing and, therefore, economic prosperity for themselves and their families. Through sharing their knowledge of the dyeing process with one another, women also help to ensure economic prosperity for other families and indigo dyeing serves to unite women in terms of knowledge and spiritual power.

Also implicit in the ability to control the indigo dyeing process are the necessary skills required to prepare the dye vat and to execute the dyeing. Dendel (1974) in her discussion of dyes and textile production methods in West Africa, notes that dye knowledge is respected knowledge. She states:

> The dye women of Liberia say that God made every plant with beautiful colour in it, but the knowledge of how to get the colour out for man's use is a secret between God and the plants. Only certain deserving people, those with cool, clean hearts, may learn the secret. (p. 113)

She suggests that "coolness" refers to "composure" or "aloofness" and is represented by the cool blue of indigo. This concept is common to the Yoruba of Nigeria and the people of Sierra Leone, as well as of Liberia. The author relates blue to the colour of clean water and the sky. Water suggests fertility and wealth while the sky is associated with a legend about indigo.

Summary

The cultural importance of cloth production, indigo, and the abilities to control the indigo dyeing processes in West Africa are interesting from a North American perspective. North American textile designers often have access to a variety of materials and written sources of information. However, often important information related to cloth and dyeing is obtained through experience, experimentation, and sharing knowledge with ones peers. North American textile designers also have access to a wide range of materials, synthetic dyes, and to scientific knowledge that should enable them to manipulate and direct the dyeing processes. However, I often find that even with textile science training and careful selection of materials and dye recipes, there is a certain amount of surprise, indeed mystery, involved in the production of dyed textiles. For example, the colour may be slightly different than intended, the dye may seep into resisted areas unexpectedly, or the quality and strength of the dye vat may change over time. At times the surprises enhance the end product, while at other times the end result is not as pleasing and alterations or adjustments must be made to the production processes. Possibly, West African designers experience the same surprises and the ritual that surrounds dyeing in West Africa, at least to a certain degree, is an attempt to bring control to processes that, at times, are subject to random results.

West African Textile Production and Design Structure

West African dyed and patterned textiles can be examined in categories related to how the images have been created. These categories include resist dyed textiles, painted textiles, and stamped textiles. Wahlman and Chuta (1979) classify the resist-dyed textiles of Sierre Leone as tie-dyed, waxed, and starch resisted. Barbour (1971) in her discussion of Yoruba resist-dyed Adire cloth refers to tie-dye and the use of cassava starch paste resist as two categories of textile design production found among the Yoruba. Although the application of wax is technically a resist technique, waxed textiles are discussed along with stamped textiles, since within West Africa (see figures 3 and 4), wax is often applied as stamped images.

Resist Dyed Textiles

Resist patterned textiles are produced when parts of the textile are covered with starch paste, wax, or when the textile is bound or folded. When the textiles are immersed in the dye baths, the areas that are resisted are not exposed to the dye and the results are usually light patterns on darker grounds.

Larsen (1976), who describes the development of resist dyeing processes, speculates on the origins of resist dyed cloth in his examination of the work of Alfred Buhler. Buhler notes that resist dyeing can be found in regions throughout the world with the exception of the Arctic. He states that the development of resist dyeing in so many regions likely occurred independently and to a large extent accidently or through adaptations of other dye processes such as through dyeing skeins of yarn that had been tied in spots or through dyeing garments that had been tucked, smocked, or embroidered. Larsen notes that more sophisticated versions of resist dyeing may have been passed on through trade. He also indicates that possible early centres of resist dyeing may have been the Middle East, India, Indonesia, and China.

Larsen speculates that African resist techniques developed independently, even though contact between African and Asiatic cultures was likely. He states that "African resist processes...are all achievements of the so-called neo-Sudanese cultures south of the Sahara" (p.34). He suggests that the practice of producing resist dyed textiles in North Africa resulted from trade with the Sudan and in the Congo Basin resist dyed textiles resulted from migration of neo-Sudanese peoples. Although more recently a number of resist dyeing techniques are practised in West Africa, my overview of resist dyeing will concern itself only with those processes that occur after fabric construction and will not include discussion of ikat processes.

Batik and Starch Paste Resisted West African Textiles:

Textile Production

Larsen (1976) uses the term "batik" to refer to "...the application of fluid or semi-fluid substances which solidify on the cloth itself so as to render it impervious to the dyebath. Hot wax, resin, and paraffin, as well as starch, rice paste, bean paste, and even half-fluid mud may be used as resist materials" (p.77). Larsen translates the research of Boser-Sarivaxevanis who identified batik on the continent of Africa as predominantly a West African tradition. Larsen notes that Boser-Sarivaxevanis' research shows the origins of batik may be found among "...the Yoruba of South Nigeria and the Soninke and Wolof of Senegal. Secondary centres arose in connection with wandering Soninke groups in Sierra Leone, Guinea, Guinea-Bissau, and Gambia" (p. 82). Investigation into more recent practices shows that cassava paste continues to be used as a resist by the Yoruba, rice paste by the Soninke of Senegal and within Guinea, while wax is the predominant medium used outside these regions and more currently by the Soninke.

The history of West African resisted textile production is difficult to trace. As Sandberg (1989) points out, "there is practically no archival documentation for West African resist technology, so we have to rely on the oral traditions told us of the crafts and methods that still survive" (p.68). The body of literature I have examined in terms of surviving textile production methods, does not indicate the current status of resisted textile production in West Africa. Sandberg provides the most recent information on production of Nigerian paste resist textiles and indicates that according to his investigations, Yoruba paste resist textile production is a disappearing tradition. He suggests that there has been little economic incentive to continue the work and few people are learning the skills of the craft. The body of literature I have examined for this study does not indicate the current status of paste resist textile production among the Yoruba.

Barbour's (1970) documentation of Adire eleko refers to the textiles of the Yoruba which utilize paste or starch resist techniques. She describes two methods of production including free hand painting of paste and the application of paste using stencils. The free hand painting processes are mainly utilized by girls who learn the skills from their mothers or from older female relatives. The preparation and application of stencilled designs are activities of Yoruba men. The author indicates that Abeokuta and Ibadan, Nigeria are Yoruba centres of resist dyeing. In Abeokuta, where large scale production occurs, dyeing is generally conducted in the family compound, while in Ibadan, women prepare the designs on the textiles and take them to a dyer or "alaro". Akpata (1971) indicates that some Yoruba family compounds may focus on the design of the textiles, while others concentrate solely on dyeing the fabric.

West African starch paste resist practices appear to utilize several starch paste recipes for both stencilled and painted patterns. However, most authors agree that the paste used, particularly among the Yoruba, consists of some combination of flour (usually cassava) and water. Another common ingredient, alum, is thought to prevent the paste from dissolving in the indigo vat during dyeing (Kent, 1971 and Polakoff, 1980) and copper sulphate is thought to keep the starch fresh longer (Dendel, 1974).

In West African, following the preparation of the starch paste, the mixture is applied free hand to the textiles using a range of instruments. Polakoff (1980) states that chicken feathers, broomsticks, and the edges of knives are common tools used in Nigeria to paint on the textiles, while in Senegal, where the use of starch paste resist is also common, calabash combs and broom twigs are used to carve patterns into a layer of paste that has been spread over the textiles. Whalman and Chuta (1979) state that in Sierre Leone wavy lines that result from scraping into the paste, are called "Kolinge" meaning "comb" in Mandinka.

In contrast to carefully executed handpainted designs, the literature indicates that stencilled designs can be more quickly applied. Polakoff (1980) notes that stencils have been made out of leather, while Eicher (1976) indicates that 30 cm x 20 cm metal rectangles are used for stencils (see figure 5) and were probably first cut from the lead linings of tea chests. Kent states that stencils of zinc or lead sheets are placed on the fabric and are produced by senior men. Starch is brushed over the sheets with tools resembling ping pong paddles. The application of the paste is executed by both men and boys. The development of such stencilling techniques is thought to be more recent than the free hand painting of paste, perhaps occurring within the last century.

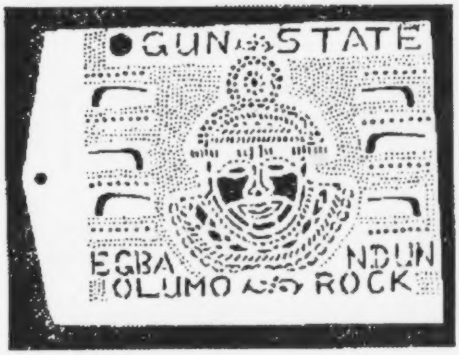


Figure 5. Metal stencil, 18 x 16 cm.

Note. From Adire: Indigo Cloth of Nigeria (p.21) by S. Barkley, 1980, Toronto: The Museum for Textiles. Copyright 1980 by Susan Barkley. Reprinted with permission.

Textile Design Structure

Imagery common to Yoruba starch paste resist textiles may be geometric or derived from nature and everyday objects. Textile images that I have found to be most interesting include geometric motifs and motifs derived from natural sources such as plants and animals. The representational imagery tends not to follow North American conventions that allude to the three dimensionality of objects on a two dimensional plane through the tools of aerial and linear perspective, but instead are symbolic representations, that are more accurately signs that seem to adhere to the two dimensional plane of the fabric. For example, in Barbour's (1970) documentation of adire textiles, she indicates that in addition to geometric figures, common representations include household utensils, small animals, and birds. A wide range of motifs arise within these categories such as scissors, wire, lizards, snakes, hens, guinea fowl, and keys (see figures 6, 7, and 9). Barbour notes that patterns among adire producers are passed from generation to generation through the female line along with techniques and, as this author indicates, "Patterns may change with time; the original inspiration is lost and it becomes decorative" (p. 367). Barbour & Simmonds (1971) and Barkley (1980) provide excellent visual records of the range of designs that are typical of Yoruba adire traditions.

Figure 6 has been removed due to inability to obtain copyright permission.

Figure 6. Stencilled Adire pattern called "Keys".

Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 74), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Stanfield (1971) indicates that the earliest West African starch patterns tended to copy stitch resist designs, but that as the craftspersons became more familiar with the starch paste techniques, designs created in the starch paste medium developed their own characteristics. Stanfield describes the overall arrangement that results from starch paste use among the Yoruba of Nigeria:

> The general layout of the design is based on rectangles, four covering the width of the cloth. In many designs seven sets of four rectangles fill the cloth and in some eight rectangles. This makes each rectangle approximately eight inches by eleven inches or eight inches square. (p. 11)

The divisions on the textiles are used to enclose individual patterns. Dendel indicates that guidelines for spatial divisions are developed by folding the textiles and that it is the skill of the craftsperson that really determines the accuracy of the block structure.

Figure 7 has been removed due to inability to obtain copyright permission.

Figure 7. Handpainted Adire design called "Ibadan dun".

Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 77), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Although generally the designs created within the block structures are thought to be decorative, I have viewed a number of named handpainted adire designs within the literature I examined. These textile designs may be used to convey a specific idea. For instance, the adire design, "Ibadan dun" (see figure 7), that depicts the characteristic motif `the pillars of Mapo Hall', means "Ibadan is sweet or pleasant" (Eicher, 1976 and Barbour, 1971). Dendel (1974) suggests that the adire design "Olokun" (see figure 8), which refers to the god or goddess of the sea and means "life is sweet", is expected to incite pleasant thoughts in the wearer or viewer such as, "money comes from over the sea, money is sweet and so life is sweet" (p. 54). I have viewed a handpainted adire design (artifact UA 88.8.22) that incorporates many of the motifs illustrated in figure 8 including floral shapes, triangles, birds, and concentric circles.

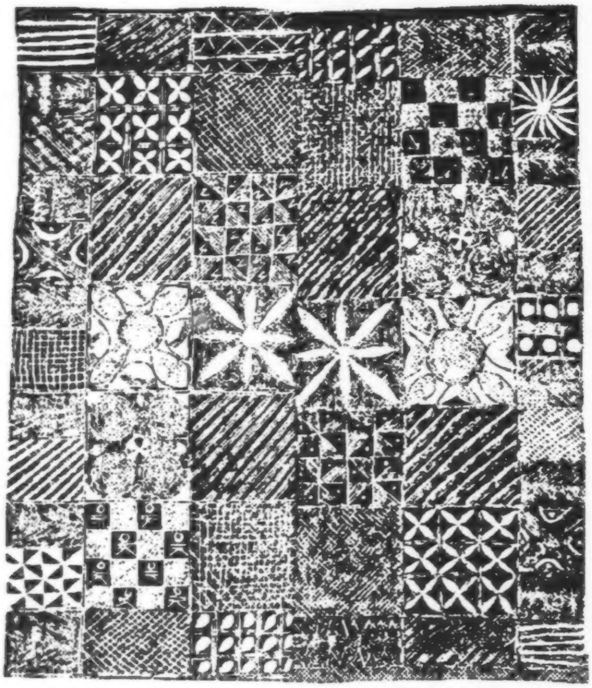


Figure 8. Handpainted Adire design called "Olokun".

Note. From Adire: Indigo Cloth of Nigeria (p.11) by S. Barkley, 1980, Toronto: The Museum for Textiles. Copyright 1980 by Susan Barkley. Reprinted with permission.

With respect to stencilled starch paste patterns, Kent (1971) states that images created are likely adaptations of European pictures, while Barbour (1971) identifies two categories of stencilled designs. The categories include repeat patterns and Coronation or Jubilee patterns. Barbour indicates that the repeat patterns (see figures 6 and 9) are most often copied from freehand adire patterns and are sometimes printed on top of factory printed cloth, most effectively stripes. Although I noted earlier that Eicher (1976) describes rectangular metal stencils, Stanfield (1971) indicates that stencils may range in size and shape, depending on the stencil cutter. They may be oval, circular, or square and the overall design of the fabric may consist of a single stencil repeated or a combination of stencil patterns. I have viewed a number of stencilled designs which combine several patterns repeated on the surface of the cloth and although I have observed predominantly block and brick scaffolding systems among stencilled patterns (artifacts UA 91.16.32 and UA 94.28.39) more random arrangements in which the stencilled patterns change direction or do not line up also exist (artifact UA 91.16.31). Generally though, the shape of the stencil would appear to influence possible scaffolding systems and the character of repeat structures produced.

Figure 9 has been removed due to inability to obtain copyright permission.

Figure 9. Stencilled Adire design.

Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 72), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

No matter what the origins or shapes of stencilled starch paste designs are, it has been suggested that stencilled designs are less detailed than the painted designs (Barbour, 1971 and Eicher, 1976) In contrast to repeat patterns, Coronation or Jubilee patterns (see figure 10) combine images which commemorate the Silver Jubilee of King George and Queen Mary in 1935 and are quite different in character from other stencilled images in that they have a central medallion. Although, among recently produced textiles, the overall character of commemorative images is consistent with this description, the designs have been altered and used to celebrate new oba or chief's accessions to power (Dendel, 1974).

Figure 10 has been removed due to inability to obtain copyright permission.

Figure 10. Detail of a coronation or jubilee cloth

Note. From "The Devolution of the Jubilee Design" by G. Jackson, in Adire cloth in Nigeria (p. 90), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Through the literature I have examined, I observed that although both stencilled and handpainted methods of image production utilize a regular structure overall, the resulting designs are quite different in character. As indicated previously, stencilled patterns are less detailed than motifs produced using hand painting of starch paste. Barbour's (1970 & 1971) and Barkley's (1980) documentations of adire cloth illustrate a range of compositions that can be developed from hand painted methods (see figures 7 and 8). Textiles illustrated show that in contrast to stencilled patterns (see figures 6 and 9) in which generally only a few images or blocks are combined in a regular structure, in hand painted compositions, there may be a clustering of motifs within the square boundaries forming the blocks, which may combine with many other blocks to form regular or irregular repeats.

I believe that artists using painted starch paste techniques have more freedom to fill empty spaces and add details where it might be considered aesthetically pleasing. Although the artists (known as "aladire's") images may be confined within the boundaries of the block structure of adire painting, the artist is not restricted by the shapes of the stencils and the kinds of marks that can be chiselled through the metal sheets; the artist may place individual motifs where they appear more pleasing and, more variations may exist in the size and detail of repeated motifs. This seems to imply a more "painterly" approach to image making in which the development of the image may evolve during execution. The stencilled composition is largely determined once the stencil has been prepared and the combinations of images have been chosen. The craftspersons have only to determine the placement and therefore, the development of overall patterns. This is not to say that one technique requires greater creativity and flexibility than the other, but that creativity can be more fully expressed and flexibility more fully exercised throughout the design process.

Even so, there is a significant exception to this generalization. Polakoff (1980) indicates that old and damaged stencils are copied and that "...distortions caused by broken areas are incorporated into the new designs" (p. 69) (see figure 11). The areas of paste that develop from the open spaces in the stencil are combed into wavy designs or cloud patterns creating an interesting free hand contrast to the more regular parts of the images.

Figure 11 has been removed due to inability to obtain copyright permission.

Figure 11. Detail of a jubilee design produced with a broken stencil.

Note. From Into Indigo (p. 68) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Tied, Folded, and Stitch Resisted West African Textiles:

Textile Production

Polakoff's (1980) overview of the production of West African tie-dyed textiles includes a translation and summary of research conducted by Boser who investigated the origins of tie-dye in West Africa. Boser attributes the development of West African tie-dye techniques to the influence of the Portuguese who colonized the Cape Verde Islands off the coast of Senegal in the fifteenth century, bringing slaves from the African continent to labour in the textile, cotton, and indigo industries on the islands. Textile design techniques that were indigenous to the African continent, including tie-dye, were "perfected" on the islands and in doing so, an important textile production centre was created. Although Polakoff does not provide information on the continued use of tie-dye techniques on the Cape Verde Islands, Boser indicates that the advanced dyeing processes eventually spread to the West African mainland and were diffused through large areas of West Africa predominantly through migrating Soninke and Manding peoples, although in Polakoff's translation of Boser, she does not state specifically when the transmission of tie-dye design information occurred.

Although tied, folded, and stitch resisted techniques are practiced widely throughout West Africa, Barbour's (1971) description of "Adire Eleso", the tie-dye techniques practiced among the Yoruba, is of particular importance to me. She notes that raffia thread for both tying and stitching is used and that the textiles are often "divided into squares by lines made by the process of rolling and oversewing...which gives broad divisions and then within the squares different patterns either by sewing or tying are produced" (p. 52). Barbour's research indicates that stitched designs may be prepared by hand and also by sewing machine. Textile production utilizing machine stitching falls within the male domain and Barbour identifies Abeokuta, Nigeria as a main centre of production for this type of textile. The efficiency of production, offered by machine stitching may be a reason for the increasing popularity of the technique that Barbour describes.

Barbour notes that tied methods of textile production are also used and may be combined with stitched techniques (see figures 12 and 13). Barbour describes tied patterns produced on textiles among the Yoruba through simple diagonal and horizontal folding techniques. The researcher provides a number of useful illustrations which describe the stitching, tieing, and folding procedures often utilized and which show the arrangement of folded designs and the binding which holds the folded textiles in place in preparation for dyeing. It is the combination of folding and binding that therefore creates the patterns on the completed textiles.

In her description of the preparation of indigo for the purpose of dyeing tied textiles, Polakoff (1980) indicates that indigo continues to be the most common dyestuff used in the dyeing of West African textiles. For the production of tied textile designs, in addition to indigo which is derived from plant matter (Lonchocarpus cyanescens in Yorubaland) , she indicates the use of other natural dyestuffs such as kola nuts (which are often combined with indigo) and camwood. I is apparent that in addition to natural dyestuffs, synthetic dyestuffs are also available within West Africa. For example, Cannizzo's (1983) study of Gara cloth produced by the textile designer, Senesse Tarawallie in Sierra Leone, indicates that Tarawallie combines stitching and tying techniques with synthetic dyes in broad colour ranges. The dyes are imported from West Germany to produce brightly coloured textiles. However, Cannizzo does not identify the particular kind of synthetic dyestuff used by Tarawallie.

Information obtained from written sources with regard to dyestuffs used within West Africa is supported by the West African textiles I have viewed which exhibit the application of a range of both synthetic and natural dyestuffs to tied and stitched textile designs. Artifacts UA 91.16.29 and UA 91.16.30 were purchased in Nigeria and have been stitch and dyed in indigo. Artifact UA 88.8.18 which was purchased in Burkino Faso, is predominantly indigo blue in colour, but contains small patches of green and brown. The presence of a combination of brown, blue, and green suggests that the textile may have also been dyed with kola nut to achieve rich surface variation. I have also viewed several "gara" textile artifacts puchased in Sierra Leone. Artifact UA 76.23.1 which is a blouse, has been tied and coloured with dye derived from kola nuts, artifact UA 76.23.2 is a head- tie which has been tied and dyed in indigo, and artifact UA 76.23.3 is a wrapper which has been tied and dyed with purple and green synthetic dyes. A wrapper (artifact UA 88.8.5a) and a headdress (artifact UA 88.8.5b) purchased in Senegal are bright blue and black in colour and the tied designs have likely been produced through the use of synthetic dyes.

Figure 12 has been removed due to inability to obtain copyright permission.

Figure 12. Tied Adire Eleso pattern called "full moon".

Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 59), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Figure 13 has been removed due to inability to obtain copyright permission.

Figure 13. Tied and sewn Adire Eleso pattern called "Tribal Marks with Fingers". Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 63), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Textile Design Structure

The West African textile designs that I reviewed showed that the images produced from tied, folded, and stitched processes range dramatically from soft-edged overall designs to designs that utilize very precise motifs arranged compositionally or in regular sequences. Barbour's (1971) summary of Yoruba Adire designs provides the clearest description of the range of images produced and techniques used. As previously stated, Barbour notes that square spatial divisions with interior patterns are characteristic of many of the Yoruba stitched textiles that she has viewed. She also describes a few common tied patterns:

> There is for instance alakete (caps) which is a series of small circles tied close to each other usually in a spiral, osumbamba (full moon) which has three large solid white circles on it with small ones round each circle, there is the intermediate olosup-eleso (moon and fruits) eleso here refers to the method of preparation in which seeds used to be tied into the cloth, so in this case eleso means literally `that which has fruits'. (p. 52)

Barbour provides photographic examples of a number of stitched designs and states that among the Yoruba, stitched and tied designs are named by women, who are the primary textile producers, according to familiar objects which the images relate to. Barbour states that the designs produced from folding processes (see figure 14) "...are just decorative and in no way representational" (p. 53). Cannizzo (1983) describes designs found in tied and stitched patterns in Sierra Leone that include rich combinations of colours on a damask surface to produce patterns referred to as "clouds", "record", "disc", "diamond", and "cowrie eye" (p. 60). Overall circular patterns and diamond designs on damask surfaces were also characteristic of the West African tied textiles that I viewed (artifacts UA 76.23.1, UA 76.23.2, UA 76.23.3, UA 88.8.5a, and UA 88.8.5b).

Figure 14 has been removed due to inability to obtain copyright permission.

Figure 14. Folded Adire design

Note. From "The Origin Of Some Adire Designs" by J. Barbour, in Adire cloth in Nigeria (p. 66), by J. Barbour & D. Simmonds, 1971, Ibadan, Nigeria: The Institute of African Studies, University of Ibadan. Copyright 1971 by The Institute of African Studies, University of Ibadan.

Barbour and Cannizzo provide useful descriptions and visual documentation of tied, folded, and stitched textiles produced within West Africa. However, I found among the most visually interesting designs produced through tie-dye processes in West Africa to be the oversewn, raffia stitched and indigo dyed textiles of the Bamun peoples of Cameroon and Ukara cloth of the Igbo of Nigeria. In each case, the designs produced are precise, intricate, and graphic. Polakoff (1980) describes the research of Tardits who credits the development of Bamun designs (see figure 15), which appear to relate to Hausa embroidery, as "...imported cloths brought from the Benue River area in Nigeria by the Hausa peoples during the latter part of the nineteenth century, when Njoya was king..." (p.41). The tie-dyed cloths were adopted as royal and named "Ntieya". I have viewed a raffia stitch resisted and indigo dyed textile (artifact UA 80.1.2) produced by the Bamileke Tribe of Cameroon that illustrates the development of a geometric design on a handwoven textile length which has been created by stitching narrow strips of cloth together. Although the geometric design on the artifact is precise and intricate, the lines created through the stitch resist process maintain soft edges characteristic of stitch resist textiles.

Figure 15 has been removed due to inability to obtain copyright permission.

Figure 15. Bamun textile.

Note. From Into Indigo (p. 43) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

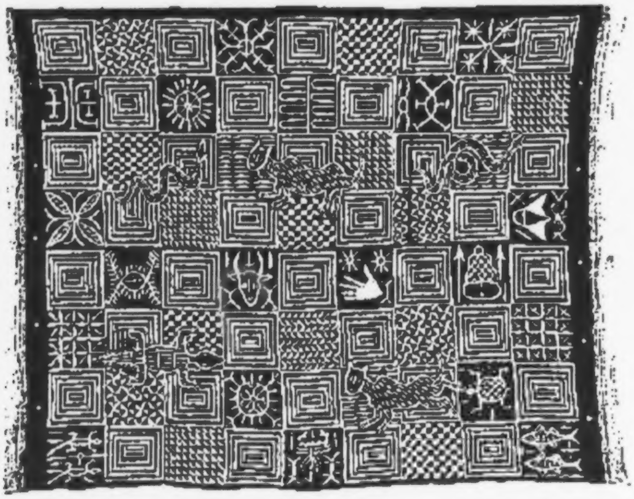


Figure 16. Ukara cloth.

Note. From Igbo Arts: Community and Cosmos (p. 60) by H.M. Cole & C.C. Aniakor, 1984, Los Angeles: Museum of Cultural History, University of California. Copyright 1984 by Regents of the University of California. Reprinted with permission.

Cole & Aniakor (1984) describe the design of Ukara cloth, (see figure 16) which is characteristically patterned indigo and white. Ukara cloth "...is an important feature of the secret men's society of that name among Cross River Igbo and other nearby peoples who have Ekpe as a central institution" (p. 59). Ukara cloths are produced as wrappers for high ranking Ekpe members and as banners and shrine ornamentation related to the Ekpe traditions. Ukara cloths combine geometric secret imagery with figurative and animal imagery. I observed that the design structure may vary and that common formats include block-like structures similar to Adire Eleko or regular scaffolding systems without block-like divisions. In both cases, the regular scaffolding structures are broken by representational images that spring over the borders of geometric patterns. In the textiles produced using the block scaffolding system, the resulting designs are reminiscent of the configuration of the board in the children's game, snakes and ladders.

Hand Painted Textiles: Bokolanfini and Senufo Textiles

Textile Production

The painterly freedom that is characteristic of cassava painting can be seen in the designs of Bokolanfini or "mud cloth" produced by the Bambara or Bamana people of Mali and the direct painted textiles produced by the Senufo of Ivory Coast. In both instances, the textile designers use the textiles as drawing surfaces. Polakoff states that for many years, the processes of Bokolanfini textile production were confused with discharge production methods in which the textiles are first dyed solid colours and then a second substance is applied to remove the dye from specific areas. She suggests that Bokolanfini mud cloth processes are actually more closely associated with painting processes than initially thought by investigators of Bokolanfini textile production. The cloth is first dyed in a solution made from a combination of local plants which contain tannic acid, N'Galaman (Andgeissus leiocarpus) and N'Tjankara (Combretum glutinosum). Immersion in this solution results in yellowing of the textiles. The designs are then outlined with an aged mud solution containing ferrous sulphate and the negative areas are filled in with the mud. The negative areas painted with mud darken, while the areas left open remain yellow. Once the mud is dry, it is removed by dipping the textile in water and the process is repeated to ensure that the painted areas become black instead of grey. A third solution consisting of ground peanuts, water, caustic soda, and millet bran is then applied to the yellow areas in order to bleach these back to white.

Polakoff (1980) and Newman (1974) describe a two-step process for the production of Senufo hand-painted cloth in which a yellowish mordant is first used to paint the designs on the fabric. Polakoff notes that the yellowish solution is derived from local plant sources including what Polakoff identifies as kadayafour, nanganeman, the denigene tree, and the niganam tree. A second layer of mud containing ferrous sulphate is than applied over top of the first resulting in the creation of black lines. Polakoff suggests that originally the second step involved immersing the fabric in the mud solution. A second method of production of hand-painted Senufo textiles is also described by Polakoff as a one step process in which dye is combined with the yellowish solution and then the mixture is painted directly onto the textile. In both cases, the design is not first drawn out, but rather it is developed directly on the surface of the textile.

Textile Design Structure

The result of the hand painting processes used to create Bokolanfini textiles is characteristically white lines which appear to rest on black backgrounds. The Bokolanfini designs I have viewed were generally linear and the overall structures of the textile designs can be seen as sections of often interconnecting motifs that may form a single central pattern surrounded by borders of contrasting patterns (artifact UA 84.7.11) or multiple strips of patterns with contrasting vertical and horizontal borders around the edges (see figure 17). In both instances motifs placed within the spatial divisions appear spontaneously and randomly placed, although the motifs may actually be placed within scaffolding systems. Polakoff's (1980) summary of literature related

Figure 17 has been removed due to inability to obtain copyright permission.

Figure 17. Bokolanfini or "mud cloth" depicting the alleged 19th century battle between Tieba, king of Sikasso, and an Imam warrior, Samory.
Note. From Into Indigo (p. 146) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

to mud cloth motifs indicates that images could be described as graphic symbol systems often used for ritual purposes. Mud cloth motifs tended to be "...abstractions or semiabstractions of common objects and...simple patterns often used several designs together to represent a well-known historical event or commemorate a local hero" (p.145) (see figure 17).

Although the processes of image generation in mud cloth production are similar to the development of images in the production of hand painted Senufo cloth, I found the resulting Senufo textile designs to be very different in character from the more ordered arrangement of Bokolanfini. The kinds of handpainted compositions produced by the Senufo of Ivory Coast vary according to the end use of the textiles. Polakoff indicates a number of traditional uses such as patterned textiles which are never worn and are produced for religious specialists to ornament the walls of cult houses or diviner's shrines; textiles that are produced for everyday wear; textiles that are produced for hunting and dancing; and textiles that are produced for the male Poro-initiate dance cult costumes.

I observed that the textile designs produced for each purpose possess a combination of individual images that seem either to be clustered with outlines around them or to be placed in row-like structures. Polakoff (1980) notes that Senufo images, clustered and outlined so that they form groups within the overall composition, combine meanings to convey specific messages (see figure 18). For example a goat, chameleon, and swallow mean "...one must always trust male sexual power, even in death..." (p. 162). The goat symbolizes male sexual power, the chameleon represents death, and the swallow refers to trust. Newman (1974) identifies the relationship between design and function of Senufo textiles. She states that textiles produced for dancing and hunting may include combinations of animal images, masked dancers, and fetishes placed randomly on the cloths. These figures are intended to bring luck and to provide protection for the hunter.

Polakoff indicates that it is likely that the images on Senufo textiles were once fairly small and placed closely together (see figure 19). The hand painted Senufo textile I have viewed (artifact UA 88.8.3) is consistent with Polakoff's description of more recently produced textiles which have a substantial amount of empty space between single images and causes each motif to be perceived somewhat independently (see figure 18). Polakoff describes two theories that attribute the evolution in Senufo textile design to a negative result of tourism or a natural progression of style development. Whatever the reason, I find that the high contrast between light and dark that exists in the more recent examples is dramatic and causes the images to be more pictorial in nature.

Figure 18 has been removed due to inability to obtain copyright permission.

Figure 18. Handpainted Senufo cloth in later style that illustrates clustering of motifs. Note. From Into Indigo (p. 164) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Figure 19 has been removed due to inability to obtain copyright permission.

Figure 19. Handpainted Senufo cloth in early style.
Note. From Into Indigo (p. 159) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Like the production of Bokolanfini, the methods used to produce Senufo textiles permit the designers to have direct control over the marks that are made on the surfaces of the cloths and therefore, a great amount of control over the character of the textile designs that result. In contrast, starch paste or wax resist processes of textile production result in random dye seepage into the resisted areas and, therefore, lines and shapes produced may be cracked or slightly fuzzy. This means that aspects of the textile designs are determined to a certain degree by chance. In any case, I feel that there is great value for contemporary designers both in the ability to control mark making and in the opportunity to let the design process evolve more independently.

Stamped and Wax Resisted Textiles

Textile Production

A range of textiles are produced within West Africa that are a result of stamping processes. The processes involve stamping of pigment or of wax to produce areas that are resisted when dyed. Kent (1971), Polakoff (1980), Dendel (1974), and Newman (1974) provide descriptions of the production of stamped Ghanian adinkra cloth (see figure 20). Although sometimes plain lengths of textiles are used, in many cases, strips of cotton approximately 35 cm wide are joined together with colourful embroidery identified by Polakoff as faggoting stitches. She suggests that the brightly coloured embroidery was likely inspired by "...the use of kente cloth strips used to decorate the more elaborate adinkra cloths of the past" (p.96). Once the strips have been joined, the cloth is sectioned off with narrow stripes created by dipping a comb in printing pigment that is prepared by women from the bark of the Badie tree found in the north of Ghana. The stripes run crosswise and also run lengthwise, following along the embroidered edges if they exist. Stamps carved from dried calabash are used to print images on the cloth. The preparation and stamping of cloths is the domain of Ghanian men. Polakoff indicates that the men often work in pairs, so that a younger person may learn from an experienced designer.

Wax printed textiles are also commonly produced in West Africa. Wahlman and Chuta (1979) describe the production of wax designs in Sierre Leone. They indicate that in this region designs are created by stamping and by splattering wax on cloth with a "...broom made of palm leaf ribs..." (p.456). The irregular type of designs which result may be combined with more regularly placed stamped or tie-dyed images. The fabric may be dyed in a vat prepared from kola nut and indigo and waxed more than once to build up colour ranging from various shades of blue, brown, and green to almost black. The lines resulting from seepage of the dye into cracked areas of wax combines with the layers of colour and the marks to create rich, spontaneous effects. Wax printed images are not only produced in Sierre Leone. Polakoff (1980) reports that textiles are also printed with wax in Ivory Coast and Senegal.

Figure 20 has been removed due to inability to obtain copyright permission.

Figure 20. Hand printed Adinkra cloth.

Note. From Into Indigo (p. 124) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Figure 21 has been removed due to inability to obtain copyright permission.

Figure 21. Factory printed Adinkra cloth.

Note. From Into Indigo (p. 124) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Textile Design Structure

The handprinted adinkra textiles I viewed (artifacts UA 80.1.4, UA 88.8.16, and UA 88.8.17) show the results of the design process of sectioning adinkra textiles with narrow stripes which create rectangular spatial divisions on the surfaces of the textiles (see figures 20 and 21). I found that single motifs were generally repeated in each section of the textiles and that small motifs were often used between the stripes that create the border regions. With respect to the placement of motifs within sections, Polakoff (1980) states that, "Through the positioning of these stamped motifs, their symbolism and the colour scheme of the cloth, a message is conveyed by the wearer" (p. 91). Designs developed from motifs whose names reflect their meaning incorporate, "...commonly used tools as well as symbolic representations of religious and social concepts" (p. 94). For example, the "star" motif (see figure 22) refers to the idea that, "...like a star, the child of the Supreme Being, I rest with God and do not depend upon myself" (p. 111).

The meanings of Adinkra motifs adapted and reconstructed by textile designers for the North American audience may not convey the meanings associated with each motif within West Africa. Rather the motifs may be adapted and interpreted according to personal associations and the cultural environment in which they are viewed. However, the rectangular spatial divisions characteristic of Adinkra may still be used as a formal means of organizing the overall textile design and also as a means of creating a personal narrative. A factory printed adinkra I viewed (artifact UA 88.8.15) is an example of how an unknown African textile designer has approached adaptation of adinkra motifs and design structure for commercial production purposes. The artifact does not contain rectangular spatial divisions and incorporates into the design a paisley motif, which is not characteristic of the handprinted adinkra motifs I have viewed.

Figure 22 has been removed due to inability to obtain copyright permission.

Figure 22. Adinkra star motif.

Note. From Into Indigo (p. 111) by C. Polakoff, 1980, Garden City, New York: Anchor Books. Copyright 1980 by Claire Polakoff.

Within the spatial divisions created during the hand production of Adinkra textiles, stamping is completed quickly and sometimes motifs overlap and run into the borders. Occasionally, dye is dripped on the cloth. The charm resulting from the lack of perfection of hand printed adinkra compared with the regularity of factory printed adinkra textiles is interesting (see figures 20 and 21). In the hand printed adinkra cloth, each section is slightly different since clustering of motifs occurs naturally as the designers place the stamps. Variety is also exhibited on the irregularly spaced, splattered, and stamped wax-resist imagery. In contrast, the evenly spaced motifs of the machine made cloth seem to lack the character and spontaneity of the hand printed cloths since it is the mistakes which provide opportunities for surprise or interest and which convey the physical energy which is required to place and press the images on the cloths.

An interesting departure from the spontaneity of adinkra and wax resist imagery placement is described by Polakoff (1980). She reports on the production of wax printed textiles at a cooperative in Dakar, Senegal. It is clear from her discussion that great skill and experience on the part of the textile producers are required to heat the wax to an appropriate temperature for dipping wooden stamps and for applying the wax to achieve clear images. The most interesting aspect of the textile production in this cooperative is the use of cardboard strips that help the designers to align and space the designs. Regularity of motif placement was reported by Polakoff as being desired by the European market. Although Polakoff does not indicate what has lead to the formation of this belief, one might speculate that Europeans are accustomed to the regularity of machine printed textiles.

Summary

The examination of the range of textile designs, production, and dyeing techniques along with the materials used in West Africa by no means illustrates the full range of textile design processes utilized by craftspeople of West Africa. Yet, I have selected techniques to illustrate the idea that there is a close link between media chosen and design produced. West African textile designers have a wide range of possibilities to explore depending on the kind of creative processes one may wish to undertake. For the North American textile designer West African techniques and materials that might be chosen for exploration are a matter of personal preference. I have considered the freedom offered by the fluidity of wax and paste techniques applied to cotton, the skill and coordination required by stamping processes, the sculptural ways of stamp and stencil preparation, the immediacy of drawing on fabric, and the magical process of dyeing in indigo and I have focused on the investigation of starch paste resist techniques on cotton textiles dyed in indigo for the purpose of this research project. Each technique has it's own value though and throughout my examination of the range of West African textile design techniques I have tried not to let each technique escape the evidence of the hand production processes. For it is the hand-making that makes the traditions most interesting and results in every piece of cloth being a new expression of both the technique and the producer.

CREATION OF THE TEXTILE COLLECTION FOR THIS INVESTIGATION

The development of my technical and aesthetic approaches to the production of the textile collection for this project has occurred gradually. After reviewing the range of textile design and production processes common to West Africa, starch paste resist and indigo dyeing on cotton were selected as the media for use in this investigation. In this section of the thesis, I will describe technical details related to the preparation and application of starch paste; the selection and preparation of the fabric; the preparation of the indigo vat; the dyeing process; and the wash off, finishing, and the installation of the textiles I produced. In addition, I will describe the processes of imagery generation and discuss factors related to the design of each textile I produced.

Starch Paste Preparation

A number of starch paste recipes in the literature were reviewed. Proctor & Lew (1984) describe a starch paste recipe that utilizes wheat flour as the main starch ingredient; and Brooks (1971) spent several years experimenting with paste resist techniques appropriate for use by North American textile artists. Her recipe for paste includes a mixture of starches including pearl tapioca, cassava starch, rice flour, and gluten flour. Dendel (1974) also notes Brooks' recipe and indicates success with a recipe developed by textile artist, Lois Martin, which consists of a mixture of tapioca, cornstarch, and gluten flour. Brooks states that tapioca is an adequate substitute for flour derived from the cassava root as it is "...derived from a root of the same genus as that cultivated in Nigeria..." but that "...tapioca works best when used in combination with starch extracted from the yucca [cassava]" (p. 12). This substitution is important because cassava flour is not readily available in North America.

Brooks provides the most extensive description of the preparation of starch paste resist and the application of the paste to cloth in the North American studio environment. Brooks states that the Yoruba apply paste at room temperature, but that in North America the paste should be kept slightly warm "...in order to duplicate the tropical climate" (p.13). She notes that the starch paste should be smooth and thick and should be applied systematically, over a short period of time to ensure that the surface will remain flat during paste application. Once dry, the paste creates a crinkled and distorted surface which means that the starch paste medium does not lend itself to the direct painting process, as dye directly applied may pool on the distorted surface and create uneven surface colours.

During the early stages of textile production, I explored the recipes and information described above. The starch pastes described were prepared and applied to a variety of prewashed and unwashed bleached and unbleached cottons. Once the paste was dry, the textiles were dyed in indigo. Initial investigation into the nature of starch pastes indicated that, while starch paste resists containing wheat flour adhered well to the textiles during repeated immersions in the indigo bath, they were difficult to apply because the consistency of the paste was not easily controlled and the paste often became lumpy. The presence of cassava flour in the paste resist seemed to aid in achieving a smooth paste that was easy to apply and also adhered well to the textile during dyeing. The most successful samples were obtained by applying warm paste as Brooks describes. However, if the paste was too hot to touch, it was uncomfortable to handle and therefore, difficult to apply. Following the initial investigation into the preparation and application of starch paste resist, I chose Brooks' starch paste recipe (see Appendix A for the starch paste recipe utilized) for the production of the textile collection for this project. As I worked with the starch paste recipe, I found that it was important to achieve the appropriate level of moisture and consistency. This skill developed with experience. Paste that was too thick was difficult to apply and did not adhere well during dyeing, while paste that was too moist seeped into the fabric and produced a bleeding effect. I found that if I reduced the moisture in Brooks recipe by less than 40 ml, I consistently achieved the appropriate level of moisture.

Starch Paste Tools and Application

Brooks (1971) indicates success with a variety of tools for handpainting applications including feathers, palette knives, syringes, and fingers. She states that the paste should be approximately one-eighth of an inch thick when applied and that the starch paste shrinks as it dries. Although I experimented with a number of the application tools including sticks and plastic bottles with application tips, I found that mulberry paper cones that are commonly used for the application of starch paste in Japan worked well. The use of mulberry paper cones enabled me to achieve reasonable control over the width and thickness of the lines. Changing the size of the metal tip on the end of the cone also allowed me to control size of the lines. By using large tips and by increasing the pressure required to squeeze the paste through the cones, I was able to fill in large areas and produce thick lines or bands. During the production of the preliminary textile samples, I used sticks to scrape back into large areas of pasted cloth, but I found that the designs I was developing were linear in nature and with irregularly repeated elements. Therefore, the designs lent themselves to direct painting processes, as opposed to carving or stencilling processes which are also characteristic of West African textile production. I found that it was necessary to apply paste carefully so that paste was not accidently dropped or squeezed out of the top of the cone onto the cotton textile. Contrary to information provided by Brooks (1971), paste scraped from the surface of the cloth left a resist-stained area and therefore, I adapted the design in order to incorporate mistakes as a more successful approach than scraping mistakes off and leaving "smudges".

Fabric Selection and Preparation for Paste Application and Dyeing

After the textile samples were dyed, it was apparent that the most successful samples were those produced on prewashed and mercerized white cotton poplin or sateen purchased from Sureway Trading (Toronto, Ontario). Although Brooks (1971) indicates that the fabric should not be prewashed, unwashed textiles seemed to resist the indigo, while the prewashed, mercerized cottons accepted the indigo readily. This appears to be because mercerized cotton textiles are highly absorbent which enables the dyestuff to enter the fibers and prewashing processes remove sizing in the textiles which would inhibit the absorption process. Unbleached cottons did not seem to absorb the indigo readily and the image produced was dull in comparison to the contrast achieved between the slight blue resisted areas and dark blue indigo areas of the originally white textiles.

Cotton sateen provided a particularly rich, shiny surface after dyeing and therefore, was chosen as the fabric to be used for the production of the textile collection. Although the combed cotton sateen seemed to result in richer textiles, the uncombed sateen was slightly wider and when the extra width was important for aesthetic reasons, the wider textile was used. After the appropriate cotton textile was selected for each design, the cotton was prewashed at least twice in warm water with generic phosphate free laundry detergent.

In preparation for the paste application, designs were drawn on paper and traced lightly onto the fabric with an HB pencil. Brooks (1971) states that fabric may be pinned to a frame or set flat on a table for paste application. Initially, paste was applied to cotton stretched on a frame and secured with tacks or metal claws. However, I found that the starch paste shrank significantly during the drying period and the textile tore away from the edges of the frame leaving a shredded border. Subsequently, I applied the paste to the textiles on a flat surface and allowed them to dry and shrink naturally.

Once the starch paste was applied to the textiles, I prepared them for dyeing. Although during the preliminary technical investigation I concentrated on the production of samples which would fit easily into the dye vat without folding, the ability to dye long lengths of cloth posed a problem. Brooks (1971) indicates that careful dyeing processes are necessary to ensure that the starch is not disturbed and that it is important to dye the cloth in a vat that is large enough to avoid cracking the paste. She suggests that the cloth should be bent without the resisted portions touching one another in the vat. Initially, I was unsure of how I could bend the large textile lengths I intended to produce and immerse the fabrics into the indigo vat without cracking or disturbing the paste. Stanfield's (1971) description of how large starch paste resist textiles are dyed among the Yoruba was helpful in solving this problem. She states:

> The dyer loops the cloth into three holding the narrow ends and the middle of the cloth together. The two ends and the fold she pleats up and carefully lowers the cloth into the dye. She holds the cloth in the position under the dye for the usual two or three minutes then lifts it out, still in the same folds, and places it on the draining board. Before redipping it she pleats the cloth again, this time making the pleats in a slightly different place". (p. 22)

After much deliberation and consultation with my thesis supervisor, I concluded that the pleating that Stanfield describes could be achieved when the paste is still moist and mouldable. Shinshi bars, which are fine wooden dowels with pins in the ends that are traditionally used by the Japanese to stretch textiles for hand painting, were used to support the textiles. The shinshi were no wider than the mouth of the dye vat and were used to secure the textiles along both selvedge edges. The textiles were then lifted from the table and pleated along the spaces between the shinshi while the starch paste was still mouldable. The shinshi were looped over a dowel and hung from a cloths line until the paste dryed (see figure 23). Hanging of the largest textiles required a minimum of three people to help lift the length of fabric from the table and to position the fabric on the dowel without disturbing the paste.

Initially, I relied on the shinshi bars to support the weight of the textile. However, during the production of one of the larger samples, the cotton slipped off the shinshi bars and destroyed the freshly pasted design. After this, I attached the shinshi bars to the textiles using loose overcast stitches with quadruple strands of polyester medium weight thread or double strands of heavy cotton thread and the stitching threads were secured to the shinshi with packing tape. During the dyeing procedure, the textiles were lowered into the vat with the 1.5 cm wooden dowel running through the shinshi loops as a support. A dowel weighted with stones wrapped in cotton ran through the lower shinshi loops to enable the textile to sink into the indigo vat. This dyeing arrangement allowed me to control the position of the shinshi and to prevent the starch on the various pleated layers from being disturbed while the fabric was immersed in the vat.

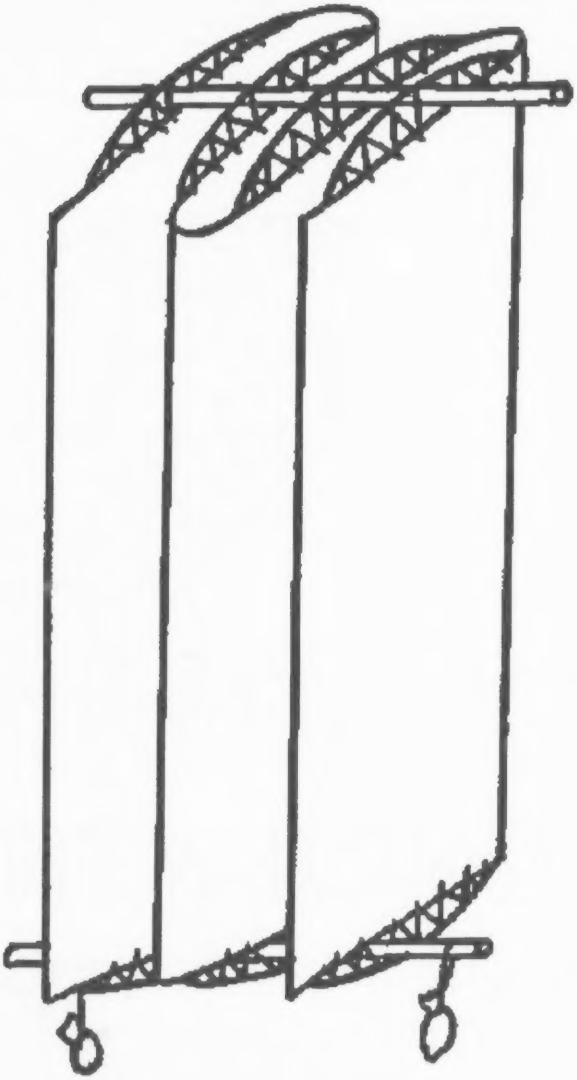


Figure 23. The preparation of paste resisted fabric for dyeing.

Preparation of the Indigo Vat and Indigo Dyeing Process

Preliminary Dyeing

Clarification of the processes associated with indigo dyeing was provided by referring to Sandberg (1989). He suggests that paste resist on cellulose fibres such as cotton, linen, and hemp is most successfully dyed in an alkaline indigo bath of 20-24 degrees celsius. He recommends a vat made from a green vitriol (ferrous sulphate) lime (calcium oxide) solution or a zinc-lime solution. A green vitriol-lime vat was prepared according to Sandberg's instructions using synthetic indigo purchased from Pro Chemical & Dye Inc. (Somerset, Michigan.). Synthetic indigo was chosen as the indigo source as it is readily available in North America and the purity of the product is controllable. For the preliminary explorations, Sandberg's recipe was multiplied by a factor of ten to achieve the appropriate volume to fill a 130 liter plastic container (see Appendix B for Sandberg's green vitriol-lime indigo vat recipe).

Sandberg indicates that indigo must be built up on the cotton fibres through repeated immersions in the dye bath and suggests an initial immersion of five to ten minutes and subsequent immersions of one minute each. Between immersions the cloth must be hung in the air to dry for complete oxidization. Information provided by Brooks (1971) was also used as a source for the development of my dyeing procedures. Her investigation into the application of starch paste resist in North American studio settings shows that immersions of between ten seconds and five minutes (depending on the temperature of the vat and the quality of the starch paste) were most successful. She also states that multiple immersions can be achieved, but that the starch paste must be allowed to completely dry between immersions to ensure paste stability during dyeing. Brooks states that the paste drying process may take three days or more.

Sandberg and Brooks served as guides for the initial dyeing investigation. For the production of the samples an initial immersion time of five minutes was used with subsequent immersions of two minutes each. The samples were immersed up to seven times to achieve a dark indigo blue. The textiles and paste were allowed to dry completely between each immersion. As the textiles dryed, the hanging direction of the textiles was regularly reversed in order to ensure evenly colored surfaces and the textiles dryed within the day which allowed more than one immersion within an eight hour work day.

Since the starch pastes used in the production of the initial textile samples deteriorated slightly with each immersion in the indigo vat, I decided that the amount of indigo used in the preparation of subsequent vats should be increased by a factor of two in order to minimize immersion time and the number of immersions required to achieve a rich depth of shade. I also decided that for the production of subsequent samples and larger textiles, an immersion time of two minutes would be used in order to ensure the stability of the paste.

Subsequent Dyeing

For the production of the large textile panels which I designed for this thesis project, I purchased a container from ZeeBest Plastics in Edmonton, Alberta. The tall, narrow lidded container was manufactured from polyethylene and measured approximately 120cm by 60cm. I chose this container in order to minimize the surface area of the dye exposed to oxygen since indigo dyeing is an oxidation process and exposure to air causes the indigo in the vat to react and weaken the vat. The size of the container used for dyeing was also selected to coincide with the widths of the textiles I would be dyeing which measured up to 115cm. Sandberg's indigo recipe was multiplied by a factor of forty which produces a vat containing approximately 320 litres and I filled the vat within ten centimeters of the edge.

Once the vat of dye was prepared, another set of samples and three large textile panels were dyed over a week long period. When compared to the first immersions in the small dye vat, I found the results of the first immersions in the large vat to be significantly richer in terms of depth of shade. The textiles were immersed a total of five times to reach the desired depth of shade, as opposed to six or seven immersions which had been required during the dyeing of initial textile samples. Reducing the initial immersion time in the indigo vat to two minutes was successful in ensuring the stability of the paste throughout the dyeing procedure. One immersion per day was undertaken, which enabled the largest textiles (up to 184cm by 120cm) to dry completely between immersions. In contrast to the initial dyeing procedure I had undertaken, I felt that reversing the hanging direction of the larger textiles as they dryed was difficult to accomplish without disturbing the starch paste and would contribute to paste instability. Therefore, I decided to turn the dryed textiles before undertaking the next immersion so that each immersion would take place in the opposite direction from the last. This achieved an evenly dyed surface, however natural pooling of indigo occured in the textile ripples created by the shrinking of the starch paste. I believe these results were unavoidable and a characteristic of immersion dyed starch paste resisted textiles I created.

For the execution of the immersion procedure, two people were required since the second indigo vat was tall. I stood on a table in order to lower the textiles into the dye container. This meant that I needed a second person to hand me the weighted textile and to help me control the end as I lifted it slowly in and out of the vat. The second person also watched the immersion time and held the freshly immersed textile while I recovered the vat with the lid.

After this next set of textiles was dyed, I returned to design development and dyeing was abandoned for approximately three weeks while I planned and prepared the next four textiles. I was concerned about leaving the vat for this period of time as Liles (1990) indicates that compared to a zinc-lime vat, secondary chemical reactions that occur over time in a green vitriol vat cause a loss of indigo. Therefore, Liles recommends that the vat be used over a two week period, stirring the vat each day. I stirred the indigo solution every two or three days and maintained the vat by covering the surface of the dye with a sheet of plastic and a lid. This minimized oxidation of the indigo. When I returned to using the vat, I found that the indigo vat remained strong and exhibited the characteristic "pea green" colour. Stirring and immersions brought back the surface "bloom" (blue froth or bubbles that float on the surface of the dye) which is characteristic of a healthy indigo vat.

Even though the indigo vat was active, a significant volume of dye solution had been lost as a result of the first round of dyeing. Therefore, I added five recipes of stock solution and the corresponding volume of sharpened water to increase the volume of the vat. "Sharpening" the water refers to the process of adding equivalent amounts of green vitriol and lime to water, which helps to deoxygenate the stock solution. Once I prepared the second indigo vat, the next four textiles were each immersed six times to achieve the dark blue depth of shade desired.

During this next round of dyeing, I noticed a greenish sediment on the surface of the textiles, particularly around the edges. Liles states that green vitriol dye solutions contain sediment that will rest at the bottom of the indigo dye vat. Therefore, before dyeing the vat should be stirred and the sediment allowed to settle for approximately ten minutes. When I increased the volume of the indigo vat, a build up of sediment resulted. The sediment became a problem because I found that as the volume of the vat decreased, it became necessary to immerse the textiles lower into the vat and at times sediment collected along the edges of the immersed textile with the result that dryed sediment on the surface of the textile acted as a resist and at times affected the evenness of dyeing. Before the final group of six textiles was to be dyed, I removed portions of sediment using a plastic container taped to a pole which was lowered into the vat in order to scoop the sediment out. Subsequent dyeing showed this to be a successful resolution to the problem.

Following the removal of the sediment, the last round of dyeing was undertaken. This occurred approximately 10 weeks after the intial large indigo vat was prepared. The indigo vat remained the characteristic "pea green" colour of a live vat. Previous immersions in the dye vat caused the removal of large amounts of the dyestuff and Sandberg states that adding new portions of stock solution helps to maintain the strength of the indigo vat. Once I removed portions of sediment, I added six more recipes of stock solution to bring the volume of the vat close to the top of the dye container. The vat was also sharpened with six recipes of equal portions of green vitriol and lime (see Appendix B for Sandberg's green vitriol-lime indigo recipe). The final group of six textiles were then dipped seven times to achieve the desired depth of shade.

Wash Off, Finishing, and Installation

Sandberg suggests that after the dyeing process has been completed, the fabric should be rinsed in a bath of water of 85-90 degrees celsius using "Soap flakes or synthetic washing materials free of bleaching agents or optical white..." (p. 133). The fabric should then be rinsed in a weak acid bath which may be obtained by adding acetic acid to the bath water "...until it has a definitely acid taste," (p. 158). The rinsing step helps to return the resisted areas of the cloth to the original white colour and to prevent crocking or rubbing off of the dye. Following Sandberg's recommendations, I washed the indigo dyed textiles in warm water with a mild detergent known as Synthrapol and the paste was scraped off with a rubber spatula or spoon. I prepared a vinegar water bath by adding approximately one litre of vinegar to a small plastic washtub of water. The textiles were allowed to soak for two to three hours in this solution.

The textiles were washed once on a short, delicate cycle in the washing machine to remove any excess starch paste dye, vinegar, and detergent and the textiles were hung in the air to dry. If residue remained, the textiles were washed a second time by washing machine. After the dyeing and washing procedure had been completed, I found that the resisted areas of the textiles remained a light blue characteristic of West African starch paste textiles, although as Sandberg indicates the vinegar water bath may have helped to brighten the resisted areas. Once the wash off procedure was established, I followed it throughout the textile production process.

After the textiles were washed, I finished the vertical edges of the washed textiles with a hand stitched hem one centimeter wide and the lower edges of the textiles were finished with a four centimeter hem. A zinc #4 twist machine chain was inserted into the lower hemmed edge to evenly weight the textiles so that the panels would hang smoothly. The upper edge of the textiles were finished with 10 centimeter wide indigo dyed cotton loops which were padded with 100% unbleached cotton fleece. I felt that the attachment of rectangular fabric loops would be compatible with the geometric designs used on many of the textile panels and would allow the viewer to see the steel rods which were inserted through the loops to hang the textiles. Steel rods two centimeters in diameter were chosen because metal is a material that is commonly used as a sculptural medium in Africa. I felt that the cool grey colour and the rustic character of metal would maintain the integrity of African inspired designs in indigo blue colours. Therefore the steel rods were intended to enhance the presentation of the textiles and it was important that the rods be visable to the viewer. The rods were produced for me by Hot House Design Studio (Edmonton, Alberta) from hot rolled mild steel finished with a blackening agent, selenious acid, and metal lacquer. A single rod was used to hang the modular textile designs I produced to emphasize the idea that the textiles were intended to be viewed as single compositions comprised of either three or four textile panels.

Imagery Generation

Visual Review of Subsaharan African Design

Development of preliminary imagery was not generated seperately from, but rather in conjunction with, the development of technical aspects of my research. The search for visual information involved a review and selection of Subsaharan African design structure and imagery. In addition to the textile design traditions described in the previous section, there is a broad range of art and craft traditions from which imagery was also selected from for the purposes of visual interpretation and adaptation in the North American studio setting. The selection process for the purposes of this study were shaped by my personal preference for certain motifs and arrangements and the available sources of visual information which included a review of museum catalogues, monographs and periodicals, and artifacts (UA 76.23.1, UA 76.23.2, UA 76.23.3, UA 80.1.2, UA 80.1.4, UA 84.7.11, UA 88.8.3, UA 88.8.5a, UA88.8.5b, UA

88.8.15, UA 88.8.16, UA 88.8.17, UA 88.8.18, and UA 88.8.22, UA 91.16.29, UA 91.16.30, UA 91.16.31, UA 91.16.32, and UA 94.28.39) from the Clothing & Textiles Collection in the Department of Human Ecology at the University of Alberta. Textiles and imagery collected during recent fieldwork which I conducted in Kenya were also used as sources of visual information and became part of my personal art/craft collection. During this period I was able to view a wide variety of Subsaharan African arts and crafts and I found the geometric patterns of basketry and Massai beadwork to be of particular visual significance to me.

Throughout my examination of Subsaharan African design, I recorded the visual information using photography, note taking, and sketching in a journal. In addition to textiles and basketry, I have examined a variety of African adornment practices including beadwork, jewellery, and body painting. During my examination of these imagery sources I identified a number of characteristics that define for me the most significant aspects of Subsaharan African design. These characteristics relate to motifs, patterns and compositional structures, and colours.

Motifs as Visual Sources of Information

Subsaharan African imagery generally consists of both naturalistic and geometric motifs. I found that I was predominantly interested in geometric motifs which was partly a result of my feeling that geometric motifs are suited to represention in a linear manner and were easily executed through application of paste utilizing a mulberry cone. I also had an interest in the development and combination of pattern structures, which geometric motifs are suited to. Since I find imagery based on geometric shapes and linear arrangements to be the most interesting, I tended to focus on a review of these elements. For example, Fagg (1980) provides extensive illustration of motifs found on Yoruba beadwork. Although human, animal, and plant figures may be found, colourful combinations of geometric motifs including triangles, squares, diamonds, stripes, and zig-zags serve as backgrounds or spatial divisions within figures. Fisher (1984) has also served as an important source of visual information related to the adornment practices of Subsaharan people in Africa generally. In addition to Yoruba, Massai (East African), and Fon (Cameroon) beadwork motifs which contain similar geometric motifs, geometric and curviliniar motifs found on the gold and bronze cast jewellery of West Africa were also found to be particularly visually interesting to me.

Faris (1972) provides extensive documentation of body painting practices of the Nuba of Sudan. Motifs and patterns typical of this practice include spots, stripes, zig zags, diamonds, triangles, checkerboards, and animals such as the antelope (see figure 24). Similarly, Cole and Aniakor (1984) provide documentation of body painting (Uli painting) and body stamping practices of the Igbo of Nigeria (see figures 25 and 26). Cole and Aniakor also illustrate door carving and wall painting patterns. As with Igbo Ukara cloth, carved and painted imagery combines human and animal figures with geometric shapes. Although Igbo design also incorporates curvilinear motifs that represent animals such as snakes or lizards, they appear to be non-referential to the North American eye and read as combinations of basic geometric shapes and linear arrangements.

Figure 24 has been removed due to inability to obtain copyright permission.

Figure 24. Nuba body designs.

Note. From Nuba Personal Art (p.50) by J.C. Faris, London: Duckworth. Copyright 1972 by James C. Faris.

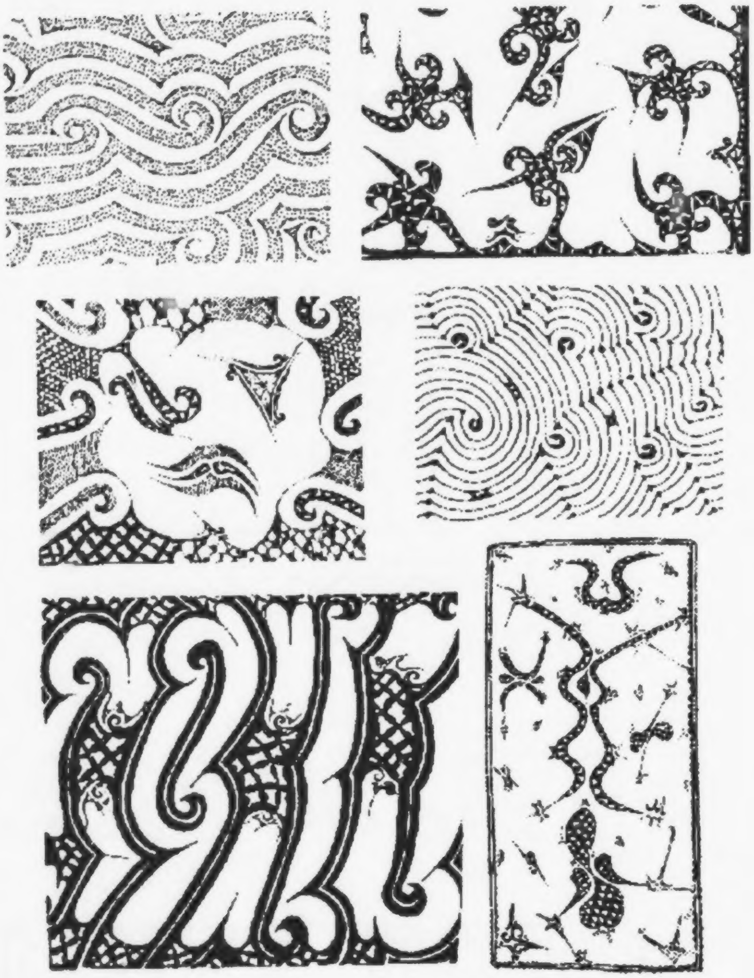


Figure 25. Uli patterns

Note. From Igbo Arts: Community and Cosmos (p. 43) by H.M. Cole & C.C. Aniakor, 1984, Los Angeles: Museum of Cultural History, University of California. Copyright 1984 by Regents of the University of California. Reprinted with permission.

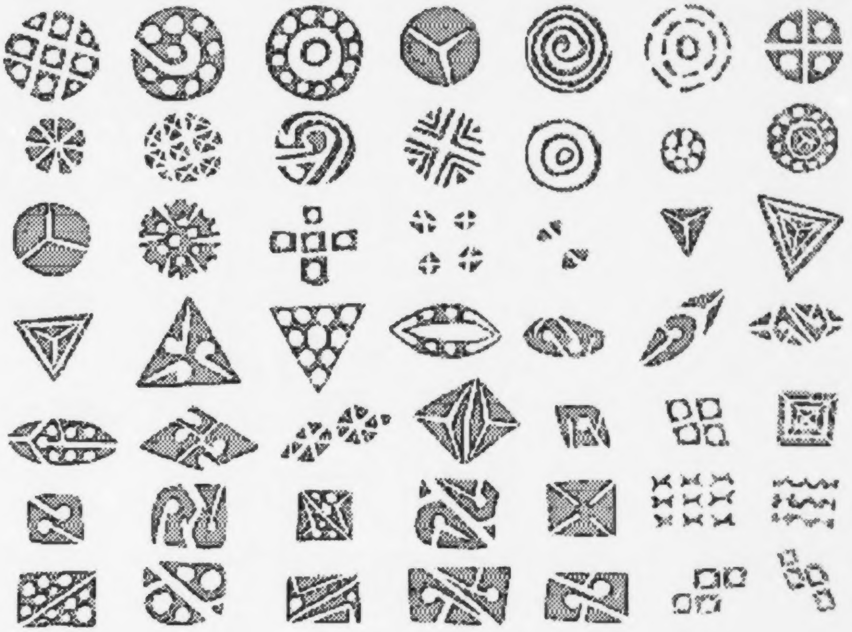


Figure 26. Body stamps.

Note. From Igbo Arts: Community and Cosmos (p. 46) by H.M. Cole & C.C. Aniakor, 1984, Los Angeles: Museum of Cultural History, University of California. Copyright 1984 by Regents of the University of California. Reprinted with permission.

Williams (1971) provides illustrations of a wide variety of motifs and patterns from African design sources which have been organized into image categories that include symbolic and simple geometric motifs, repetitive designs and textural patterns, animals and mythical figures, human beings, masks, artifacts and objects with figural components, and abstract and complex geometric motifs. Of particular interest to me are the geometric patterns found on animal figures (see figure 27) and the motifs which form the bases of wooden headrests from Mashonaland, Zimbabwe (see figure 28) which could be used to develop pattern structures.

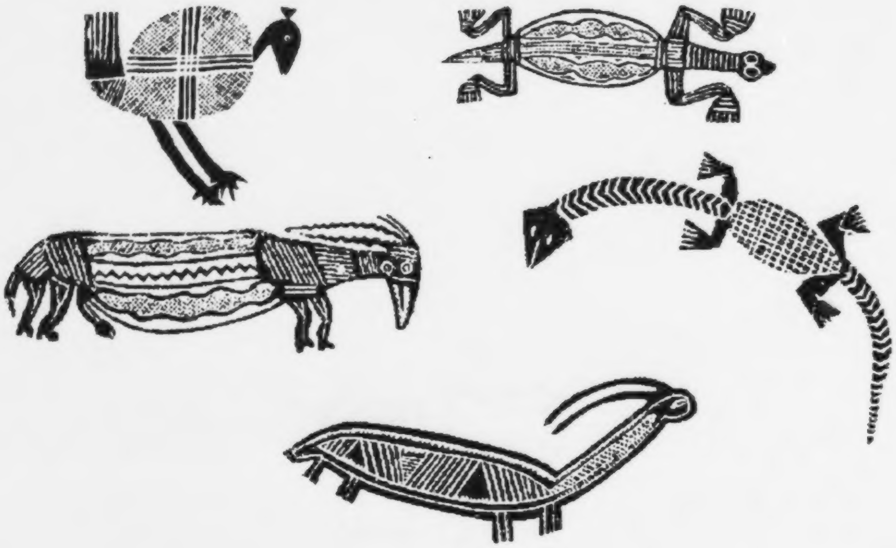


Figure 27. African animal figures.

Note. From African Designs From Traditional Sources (pp.71, 75, & 79) by G. Williams, 1971, New York: Dover Publications. Copyright 1971 by Dover Publications. Reprinted with permission.

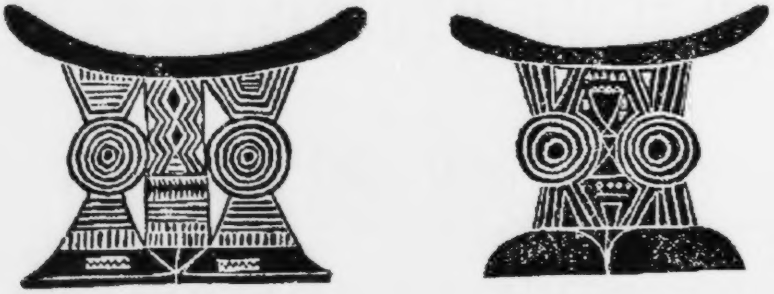


Figure 28. Wooden headrests from Mashonaland.

Note. From African Designs From Traditional Sources (p. 149) by G. Williams, 1971, New York: Dover Publications. Copyright 1971 by Dover Publications. Reprinted with permission.

Colours as Visual Sources of Information

As shown by the discussion of the West African textile traditions described in the previous section, colour combinations creating strong contrasts are typical of African design. Although contrast may be created through the use of combinations of primary colours such as those commonly exhibited on East African beadwork, it is often created through light patterns on dark grounds as exhibited by indigo dyed resist textiles (see figures 7 and 13) and hand painted mud cloths (see figure 17), or dark patterns on light grounds as exhibited by hand painted Senufo cloths (see figures 18 and 19) and stamped Adinkra textiles (see figures 20 and 21). I find the simplicity of such two-colour systems appealling and suited to the medium of starch paste resist which is traditionally combined with indigo dyeing in West Africa.

Pattern and Compositional Structures as Visual Sources of Information

My examination of Subsaharan African art and craft traditions such as textile designs, relief carving, wall painting, and beadwork, suggest to me that African design is highly decorative. As exhibited by the textile and craft traditions described thus far, a number of patterns may be combined on a single surface and surfaces are often sectioned or divided by border systems or stripes that serve to organize the overall structure of the design. In particular, I was intrigued by the spatial divisions commonly found on hand painted starch paste resisted cloth (see figures 7 and 8) and adinkra (see figure 20) which are characterized by divisions of square and rectangular regions that cover the surface of the textile.

I am also intrigued by the pattern structures found on Kuba embroidered textiles which were photographically documented and described by Meurant (1986) (see figure 29). The format for Kuba textiles is often created through the placement of rectangular, diamond, or triangular shapes that seem to interlock with one another and to cover the surfaces of the textiles. At times the individual shapes are emphasized with repetition of outlines, or combinations of stripes, checkerboards, and diamonds that fill in the centers of each motif. Generally, there are repeated elements throughout the textiles but the structure of the repeat is irregular and often incorporates surprising elements such as counter change and alteration of repeat structures.

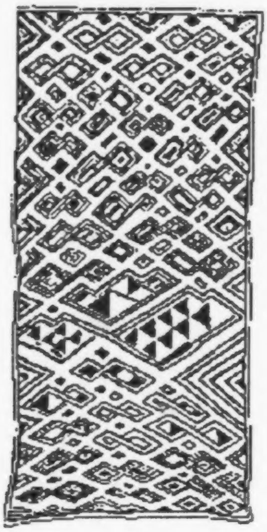


Figure 29. Kuba textile

Note. From Shoowa Design: African Textiles from the Kingdom of Kuba (p. 178) by G. Meurant, 1986, London: Thames and Hudson. Copyright 1986 by Hansjörg Mayer. Reprinted with permission.

Irregular elements have been extensively discussed with respect to the patterned textile traditions in West Africa and I have also noted irregular elements in Subsaharan African design generally. This irregularity arises from randomly placed elements in the structure of pattern scaffolding, the breaking of patterns using vertical strips of cloth or embroidery in adinkra cloth, and the unpredictability of the dyeing and stamping processes utilized. This irregularity operates within a system of regularity and/or rhythms. Adams (1989) discusses the nature of irregularity in Middle African textile design compared to design structures that North Americans might be familiar with. She states:

> Middle African designs on textiles are composed differently: either unlike motifs are juxtaposed, or the orderly repetition of the motif is interrupted

> by a shift in texture, direction, or scale. (p.35)

In identifying asymmetry in the overall design structure, she acknowledges that regularity and symmetry must exist in order for the opposite to be perceived within the same textile. She also observes that in some instances an aesthetic or visual balance is achieved, while in other cases it is not.

Examining Middle African Design more broadly, Adams looks to other authors' explorations of the relationship between regular and irregular elements. She suggests there are underlying aesthetic preferences for the complex rhythms that result from the combination of these elements and that these preferences apply to many areas of Middle African life. For example, the simultaneous suspending and preserving of musical beat that can be heard in Middle Africa creates a sense of energy that is descriptive of life. The vitality and spontaneity of Middle African design can be seen to relate to the hunting and gathering way of life in which adapting to change ensured survival; it is an expression of social order in instances where disorder or unpredictability is introduced into an orderly life as in the instance of death; irregularity serves to disguise information or to obscure meaning as with the symbols found on Bamana textiles; and, irregularity makes objects unique or individual and therefore, mysterious and interesting. In this sense, irregularity marks the makers existence or identity.

There may be multiple reasons for the complex rhythmic structure that is created by the disruption of regularity in West African textiles and design. The combination of regularity and irregularity is among the most significant characteristics that draws me to Subsaharn African design, as it is what brings the designs to life and makes them uniquely African. I find the structural organization and irregularity of African design to be interesting elements affecting the organization of space and a method of leading the viewers eye through the composition of the ornamented surface. I have explored these elements with respect to the development of my own textile imagery. The manner in which spatial organization has culminated in the development of each textile in the collection will be discussed later.

Summary

Initially, I seemed unaware and unable to articulate which parts of the final textile collection would be influenced by Subsaharan African design. I have not always been cognizant of every aspect of the "...sorting, orderering, and relating..." of information that Potter (1980, p. 21) describes. As the textile designs were produced, I became increasingly aware of the attributes of Subsaharan African design which were important to the designs that were being developed. Identification of these attributes helped to define the design criteria for the textile collection. The defining features of the textile collection are identified and described more fully in my discussion of the generation of designs for the textile collection. It is important to note that another textile designer undertaking a similar research project might indentify different attributes as significant and therefore different design criteria would be utilized.

Preliminary Imagery Generation

My examination of Subsaharan African design lead to the processes of selection and adaptation or reconstruction of imagery. As I have noted previously, photography, note taking, and a sketch book were used to record the range of motifs and patterns described in previous sections of the thesis that pertain to West African textile design and Subsaharan African design. The images I recorded were used as starting points for the development of preliminary design ideas. Joyce (1993) and Fisher and Wolfthal (1987) served as resources for the process of imagery and pattern development, suggesting the utilization of visual sources of information such as museum catalogues, periodicals, and books and providing information about materials and processes suitable for imagery production. Fisher and Wolfthal state that motifs can be combined, changed in scale, embellished, and simplified as a means of developing new designs and that gouache, dyes, inks, art papers, tracing paper, brushes, and drawing instruments can be used as tools for the execution of design ideas. Information provided lead to the development of pencil and ink drawings, gouache studies, and collages.

Initially, because I was interested in pattern structure and geometric shapes and the process of developing images placed in scaffolding systems was familiar to me, I produced black and white pattern studies based on geometric shapes and regularly repeated units. At this stage of the research process, I had not selected a specific medium for exploration. Once starch paste resist and indigo dyeing were identified as textile production methods, my exploration of design ideas moved to the production of gouache studies in indigo blue and white that ranged in sizes up to 45 cm by 60 cm. At first, indigo coloured gouache was applied to natural or white watercolour paper. However, as my understanding of the starch paste resist medium grew, I realized it would be more appropriate to develop painted images with white gouache applied to a blue ground. This was achieved in two ways, by purchasing navy blue paper and applying white paint on this surface or by applying an indigo coloured wash to130 lb Strathmore watercolour paper and applying white paint to the blue painted ground. When white paint was applied to the paper washed with blue, it often absorbed the first layer of colour applied, and created a light blue effect reminiscent of starch paste resisted textiles dyed in indigo.

Throughout the process of developing gouache study designs, I interpretted and reconstructed Subsaharan African imagery by selecting, altering, and combining motifs to develop new images and arrangements. This was achieved through creating collages, sketching, and painting. During this design experimentation the designs were sometimes planned on paper with a pencil and executed with paint, while in other instances, I worked more spontaneously, selecting and creating new arrangements and motifs directly and intuitively as I sketched, painted, and formed collages. The experimental approach that I describe and made use of is also noted by Wahlman and Chuta (1979) in their description of the production of resist dyed textiles of Sierre Leone. For example, these authors indicate that along with resist traditions being handed down through families there is a certain amount of secrecy surrounding the creation of designs. According to Wahlman and Chuta innovation therefore, occurs from attempts to copy patterns. Although my intent has not been to copy patterns or motifs, I have attempted to reconstruct the imagery I have collected and new two-dimensional forms have been created through the selection and adaptation of these images. The designs I produced were predominantly geometric or linear arrangements, although initially I incorporated animal imagery as well.

Generation of the Designs for the Textile Collection

The motifs and patterns which I selected and adapted became recurring elements on the textiles I have produced and together with materials and technical processes, began to define the criteria for the production of the textile collection. In addition to the medium and motifs used, the textile collection was also defined by a progression of design on two dimensional surfaces to the incorporation of illusionistic three-dimensional space. Depth was created through the use of overlapping borders, patterns, and motifs. The textile collection also demonstrates the progression of designs from highly regular ornamented surfaces toward the incorporation of open areas of space and the introduction of unexpected elements in the latter works. I produced unexpected elements through the use of counter-change, variations in the interior ornamentation of motifs, changes in scale, and a variety of scaffolding systems.

The creation of the textiles which form the visual component of this thesis project was a reflective process resulting from a combination of active production, thought, consideration, and discussion consistent with the descriptions of the creative process by Zeisel (1981). As I gained technical proficiency in using starch paste and indigo, I was able to focus on the visual development of my ideas. During the production of preliminary imagery and textile samples, I found that there were particular Subsaharan African geometric motifs that I was attracted to (see figure 30). For some of the textiles, preliminary sketches were produced, and for others, the designs were worked out directly to full scale on large sheets of paper. Generally, I found it easier to work in full scale to determine appropriate spacial arrangements and proportions. From the production of the first few designs I obtained ideas for future designs. Although this sounds as if the development of visual ideas ocurred in a linear

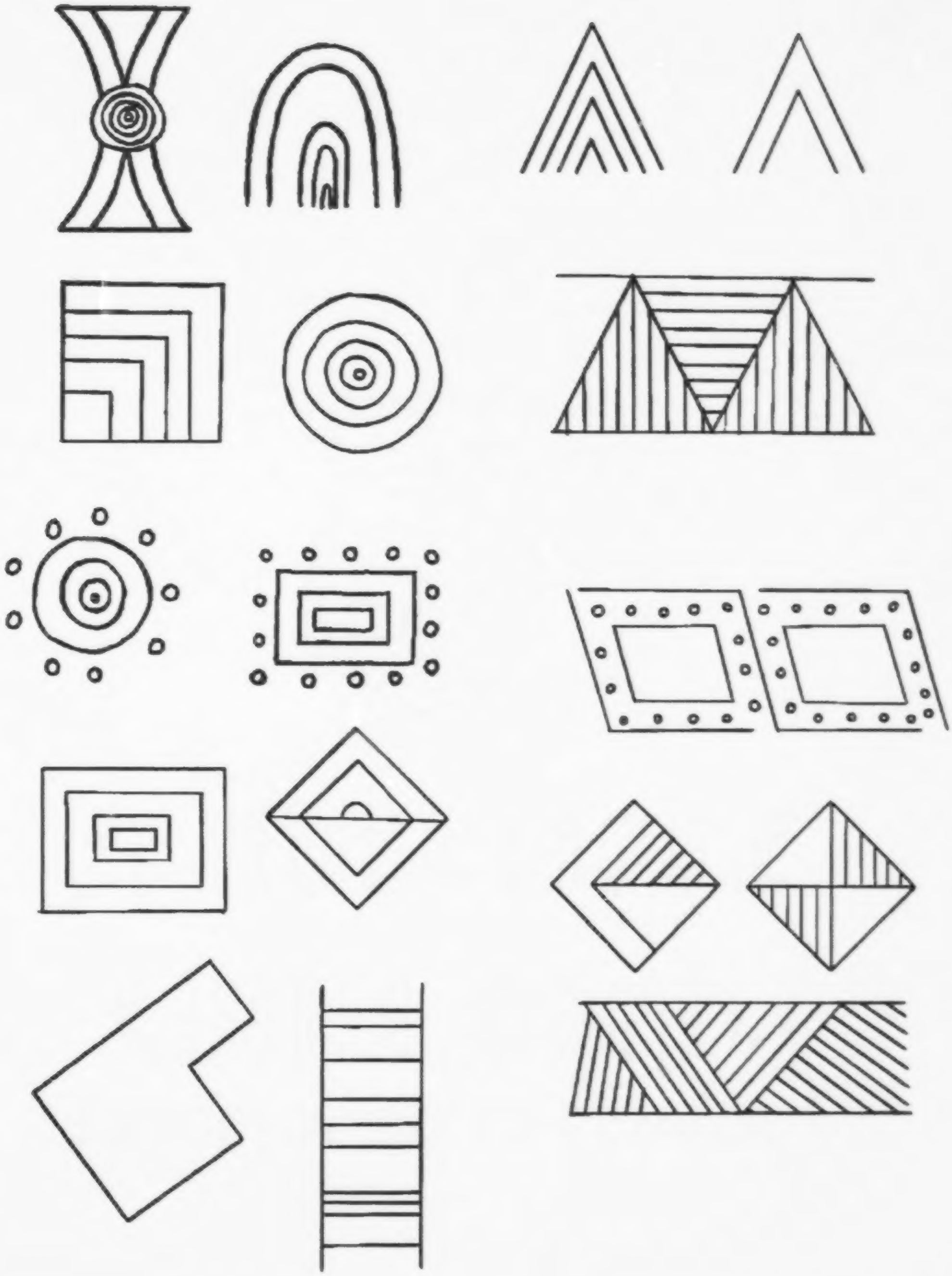


Figure 30. Geometric motifs utilized during the development of designs

manner, in fact, the process was more interconnected, with the last few textiles being the result of the progression of a number of design ideas arising from more than one of the previous textiles. This is consistent with descriptions of creative thinking by Potter (1980) and Von Oech (1983) who state that creativity involves combining, reorganizing, and integration of information. The lateral nature of creative thinking is also demonstrated by the fact that I often worked on more than one design at a time, although each was usually at different stages of design development.

The following is a discussion of the individual textiles I produced as a result of exploring starch paste resist and indigo dyeing. Generally, the production of the textiles can be characterized technically by the selection of square or rectangular formats and the utilization of the starch paste resist developed by Brooks (1971). I applied the starch paste resist to cotton sateen textile lengths (90 cm to 180 cm long and 90 cm to 100 cm wide) which were immersed five to seven times for two minutes in duration in the ferrous sulphate indigo vat described by Sandberg (1989). I have attempted, where possible, to identify sources of visual inspiration and to link the progression of design ideas, because designers rarely attempt to describe the thought processes that are undertaken since they are concerned foremost with the execution of and therefore, final outcome of design projects. I have attempted to convey the thought processes I have undergone in order to make a contribution to the description of the design mode of inquiry. However, as Zeisal, Potter, and Von Oech describe, the adaptation and integration of design information is a complex process, and therefore, it is not always possible to identify sources of ideas. The inability to identify the sequence of progression in the development of visual forms is not a limitation of the design mode of inquiry, but rather it is a characteristic of the investigation of visual ideas which is inherently a lateral process.

Textile #1

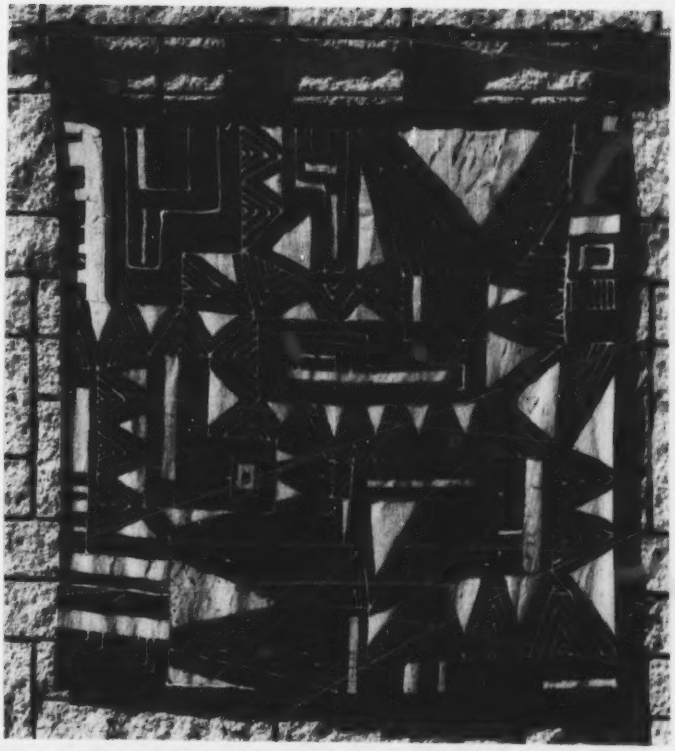


Figure 31. Starch paste resist on cotton dyed in synethic indigo.
Dimensions: 90 cm by 90 cm

Textile #1 (see figure 31) utilizes interlocking rectangular and other irregular geometric shapes typical of Kuba embroidered textiles (see figure 28). I developed the first textile design by selecting similar shapes and by ornamenting and placing the shapes in a manner characteristic of Kuba textile arrangements. However, I increased the scale of the arrangments and working with a large scale of motif resulted in a concomitant enlargement of the negative spaces between the motifs. I reconnected the motifs by filling in the negative space with triangles that lead the eye of the viewer by moving in a zigzag manner through the space that surrounds the basic shapes. Since the distance between the original geometric shapes varies, so does the size of the triangles being used to connect the shapes to one another. The enlargment of scale and filling in of the spaces between motifs has changed the figure/ground relationship that exists within the source textiles which may be understood as geometric interlocking shapes on a ground; what originally may have read as the ground, now becomes part of the positive space of my composition.

My earlier examination of Yoruba adire compositions lead me initially to the selection of the square format apparent in this textile design. The square format, angular shapes, and large white areas combine to create visual tension that forces the viewer's eyes to move back and forth between central areas and the boundaries of the composition.

Textile #2

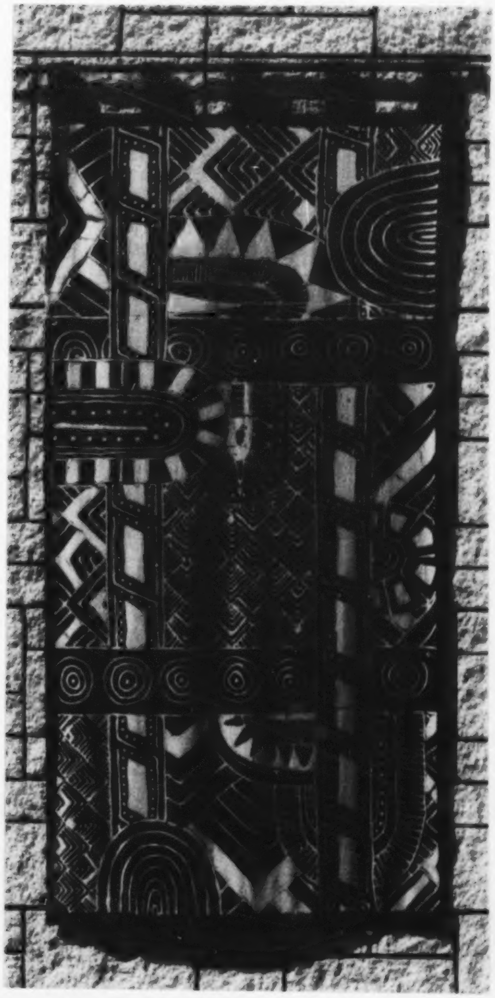


Figure 32. Starch paste resist on cotton dyed in synthetic indigo.
Dimensions: 92 cm by 180 cm

Once the first textile was completed, I realized that a square format would limit the size of the designs I was creating since the cotton available for dyeing was only 115 and 120 centimeter wide. Therefore, I broadened the format of the textile collection to include the rectangular shape exhibited by Textile #2 (see figure 32).

Textile #2 utilizes the spatial divisions typical of Yoruba adire and Ghanian adinkra cloths, on which the surfaces of the textiles are often divided into rectangular and square regions which each contain individual patterns. This is achieved through the placement of two horizontal and two vertical bands of pattern that divide the surface of the textile into nine areas. The placement of these bands serves to frame the composition and leads the viewers eyes around the surface, toward and from the edges of the textile.

Motifs used to ornament the interior spaces in this textile include concentric u-shapes, triangles, diamonds, and dots. Variations of triangles and diamonds can be found in a wide variety of Subsaharn African art and craft traditions. In my search for visual imagery, I recorded diamond patterns on walls of houses and in the form of human body decoration and I also noticed these motifs as common elements in beadwork and carving. I became interested in the use of concentric u-shapes through observation of West African knitted garments and carved imagery and the use of dots through observation of African body painting and scarification practices. Through the process of imagery generation, I have adapted and combined these motifs according to my intuition and personal preference. I also found that the use of the cone for applying starch paste lent itself to the execution of the linear designs selected.

Illusionistic three dimensional space was created through the weaving of the dividing bands and through the layering of the diamond pattern, u-shaped motifs, and bands that create the composition. The incorporation of illusionistic three dimensional space is significant, as I did not find this feature to be a common element in West African textile designs. I view the incorporation of depth as a departure from West African inspiration, but a commonly found characteristic in North American design. This is an example of one way in which I have integrated the visual information I have obtained during this investigation with the visual traditions of the North American culture I live in and the incorporation of illusionistic three dimensional space has added interest and a surprising element to the structure of the design.

Other unexpected elements and departures from reguiar repeat structures were created by varying the scale of the diamond patterns and by the selection of areas to remain white. Variety was also created by changing the scale of the u-shaped motifs and the designs that ornament the interiors of the motifs.

Textile #3

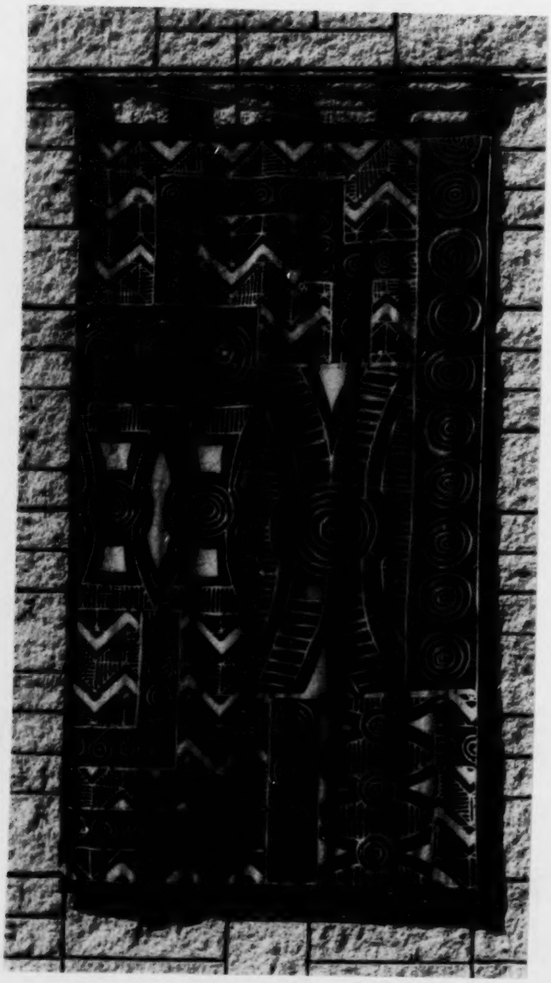


Figure 33. Starch paste resist on cotton dyed in synthetic indigo.
Dimensions: 98 cm by 180 cm

Prior to the preparation of Textile #3 (see figure 33), I had produced pattern studies that incorporated a common motif found on the bases of Shona headrests. The pattern studies I created varied according to the arrangement and interior ornamentation of motifs. With these pattern studies in mind, I developed the design for Textile #3 by enlarging and varying the scale of the motifs and the direction of the pattern progressions. The placement of the enlarged and sometimes repeated motifs forms spatial regions on the surface of the textile and is consistent with my interest in the rectangular spatial divisions found in West African adinkra and adire eleko. Bands of pattern that also help to define the spatial regions throughout the surface of the textile were created through the repetition of concentric circles that are derived from the center of the headrest motif. I also observed concentric circles as motifs commonly found on carved and metal surfaces such as jewellry and cast sculpture from West Africa.

As a result of the production of Textile #2, I developed a preference for combining angular imagery with circular motifs and highly patterned areas with more open or large scale pattern structures. This was achieved through the placement of a regularly repeated zigzag structure on a small scale that was intended to serve as the background of the composition. This pattern is the result of gouache studies I developed during the early stages of imagery generation and I view the background pattern as being in contrast to the less detailed, larger scale of the circular repeat and headrest motifs. The combination of motifs and patterns also illustrates my developing preference for the combination of regular repeat structures with randomly placed motifs. The result is a visual arrangement that leads the viewer's eyes along rows of concentric circles toward and away from the larger fields of repeat and singular large scale motifs that serve as visual resting areas.

Textile # 4 (a, b, c, d)

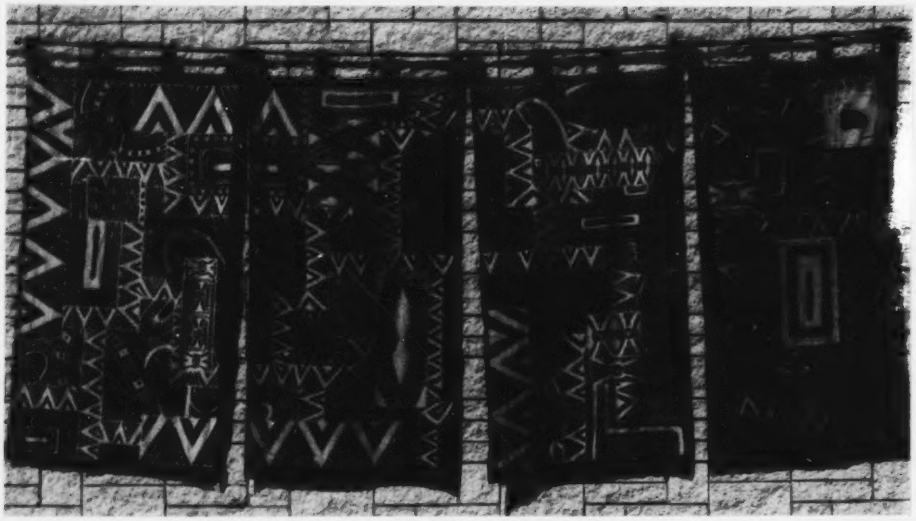


Figure 34. Starch paste resist on cotton dyed in synthetic indigo.
Dimensions: 404 cm by 180 cm (98 cm by 180 cm each)

I will discuss the next four textile panels together (see figure 34), because they were planned and are intended to be viewed as a single composition. As with the previous textiles, the composition is structured through the use of bands of pattern that divide the surface of the textiles and lead the viewer's eyes around the surface and from one textile to the next. Within this textile composition I chose to combine the triangular shapes and rectangular structures typical of Textile #1, the u-shaped motif characteristic of Textile #2, and the headrest motif found in Textile #3. Within segment (a) of the composition, these motifs are combined to create a highly decorative effect on the surface of the textile which is covered with patterned regions. I incorporated more open areas of space as I designed the next segments of the composition in order to create an element of surprise, to provide the viewer with areas of visual rest, and to suggest that the initial structure of the design was undergoing a transition in structure. These features were developed in order to emphasize the combination of regularity and randomness which I have previously identified as an important characteristic of Subsaharan African designs.

In attempting to create a three dimensional illusion, I combined the motifs and pattern structures so that the u-shaped motifs serve as a background on top of which the bands of triangular repeats have been placed. The headrest motifs and large scale triangular repeats are placed in single units or as repeat structures that serve as vignettes placed sporadically along the surface of the composition. As more open space is incorporated along the length of the composition, the headrest vignettes develop into unornamented rectangular units. As well, the small scale triangular repeat that serves to define the spatial regions of the textile becomes altered and forms a more irregular structure of colliding sections of lines. The arrangement of repetition and intersection of groups of lines is an arrangement that I observed as part of many Subsahararn African art and craft traditions, but particularly on carved wooden and cast metal surfaces.

Once again, unexpected elements have been produced through changes in pattern structure and scale, the development of increasingly open areas of space, and through methods of ornamenting the individual motifs.

Textile # 5 (a,b,c)

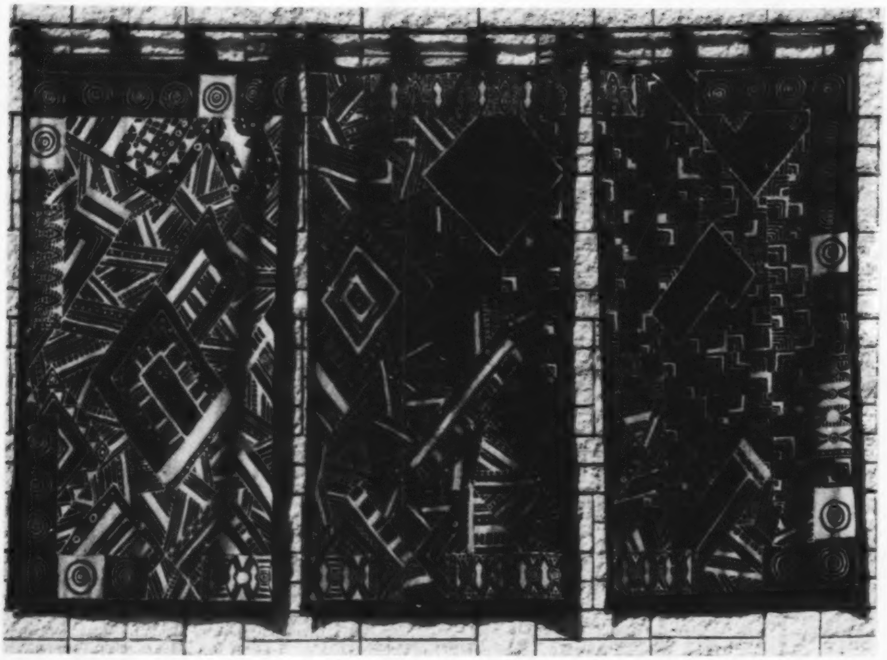


Figure 35. Starch paste resist on cotton dyed in synthetic indigo.
Dimensions: 278 cm by 180 cm (90 cm by 180 cm each)

The textile panels #5 (a, b, c) (see figure 35) also form a single composition. The development of this design is closely related to Textile #4 in that the progression from left to right illustrates a change in both pattern structures and use of space. To begin with, I have surrounded the interior design with a border of repeated circular and headrest motifs. Unexpected elements are incorporated into the border structure through counter-change of the circular motifs and variation in the detail and method of ornamenting the headrest motif. As well, I have opened the borders around the exterior of the composition to allow the interior portion of the design to reach the edge of the composition.

Similar to Textile #1, the interior portion of the composition makes use of basic rectangular and diamond shapes derived from Kuba embroidered textiles. As the design progresses from the first segment through the third, the shapes become less ornamented and are spaced farther apart. In Textile #1 and in #5, the interior ornamentation of the geometric shapes I have created relates to my observation of Kuba textiles, but also to patterns found as part of East and West African beaded designs. I also observed similar patterns as parts of knitted designs and body painting practices. In all instances, common arrangements in African textiles included repetition of contrasting stripes, checkerboards, and diamonds.

In the bottom left corner of the textile (a), I filled the negative space between the large geometric shapes of the design with the intersecting sets of lines that begin to appear in the previous group of textiles. As the eye procedes into the second segment (b) of the design, the groups of lines begin to break apart and create open areas of space. In the third segment (c) of the design, I filled the open areas with a variation of the diamond pattern that appears in Textile #2. In Textile #5, the pattern forms a block scaffolding structure, and is at first irregularly placed, at times running into the intersecting line groups. I have attempted to give the impression that the pattern structure is forming gradually so that the overall composition may be interpreted as one pattern structure being transformed into another.

Textile # 6 (a, b, c,)

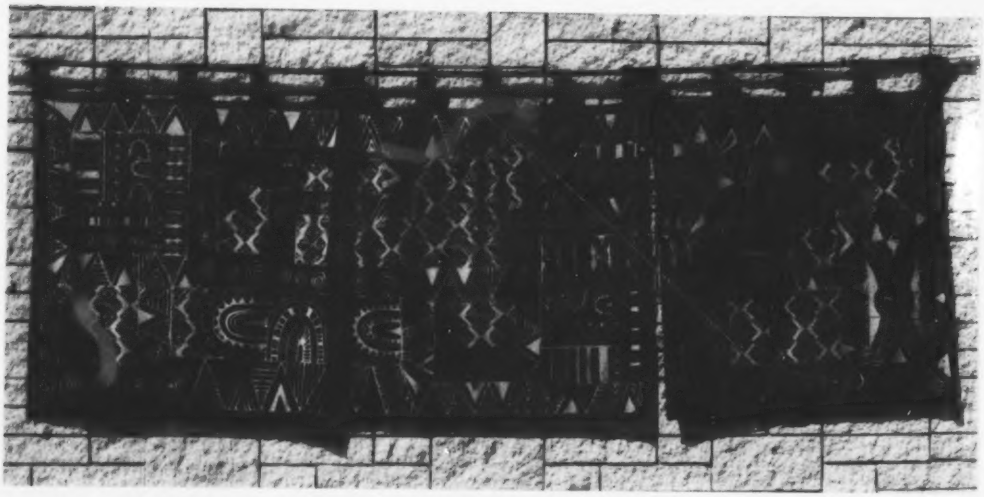


Figure 36. Starch paste resist on cotton dyed in synthetic indigo.
Dimensions: 308 cm by 100 cm (100 cm by 100 cm each)

For the last group of textile panels I produced (see figure 36), I reintroduced the square format selected for Textile #1 The progression of three squares in a horizontal direction reinforces the rectangular format that was used for the other textile designs. As with Textile #5, I incorporated a border that surrounds the interior design. The border pattern consists of a combination of groups of triangular and circular motifs. I varied the size and number of rings of the concentric circular motifs and I varied the ornamentation of the triangular motif through the direction of the stripes and by filling in regions. In addition, I allowed the border to extend into the interior of the textile to create spatial regions in the design. In contrast to the bands that create the spatial divisions in Textiles #3 through #4, the bands in Textile #6 vary in width as these intersect and change direction. This serves to lead the eye through the textile design.

The interior arrangement in the top left of Textile #6 (a) echoes the headrest, u-shaped, and circular motifs found in the previous textiles. The combination of motifs which I selected is the result of a textile sample I produced during the early stages of textile production and all or portions of the arrangement reappear in various scales in other areas of the design.

Of significance to describing Textile #6 is the small scale diamond pattern that I have used to fill all or part of several of the spatial divisions created. I developed this pattern from studies produced during the early stages of design development and I placed the pattern so that it will lead the viewer's eye from one section into the next. Three dimensional illusionary space was created by giving the impression that the diamond pattern serves as a background that exists underneath the border system. At times though, the pattern intersects and overlaps the border which creates spatial ambiguity.

SUMMARY

Directions for Continued Design Investigation

The textile designs completed during the studio component of my research and which forms the body of this thesis leads to further avenues of investigation that I wish to pursue in the future. The topics of investigation that interest me relate to two general areas, which are the further investigation of starch paste resist technologies and the further development of my personal textile imagery.

Starch Paste Resist Technologies

Diversification of Technique

The textiles produced during this investigation resulted from the application of paste to fabric using handpainting techniques. As a result, the textiles are linear in nature. Broadening my skills related to starch paste application would require me to familiarize myself with the application of paste utilizing stencils and of carving into the starch paste. It seems probable that investigation of these additional processes would result in the development of skills which would broaden the variety of images I could produce. For instance, stencilled processes lend themselves to regular repeat structures, as opposed to the more irregularly repeated images that I have concentrated on in this investigation. Carving into the paste produces greater opportunity for the use of counter-change as a design feature in that images may be interpreted as blue lines on white grounds. Exploration of these techniques would allow for diversification and extension of the nature and range of the compositions I might execute.

Investigation of Japanese Starch Paste Resist Technologies

A number of starch paste resist techniques that make use of rice flour as the main starch ingredient, are used by Japanese textile designers. "Yuzen" is a multicoloured paste resist dyeing technique, while "katazome" involves the application of starch paste through a stencil, and "tsutsugaki" is the freehand painting of starch paste (Yang & Narasin, 1989). These methods have lead Japanese designers to produce multi-coloured textiles with fine designs. Japanese designs are different in character from the two colour system of West African starch paste resist indigo-dyed textiles. An understanding of a variety of indigenous techniques would provide me with a wider range of design possibilities within the starch paste medium and offer new avenues to me with respect to the exploration of coloured designs in contrast to the monochramatic colour scheme characteristic of the use of indigenous West African starch paste resist techniques.

Textiles Imagery Development

The textiles completed during the investigation leading to this thesis are compositional in nature and are intended to be viewed as individual textile art pieces. I feel that the compositions could be adapted for functional purposes without destroying the character and integrity of the designs. This could be achieved by developing repeat structures based on the compositional arrangements and by developing repeated elements that exist within the designs in a more structured manner. The production of designs for commercial purposes may also involve the use of photographic silkscreen technology in which the character of the starch paste medium could be mass reproduced in a technically efficient way on large lengths of cloth suitable for use in the fashion or home furnishings market.

I have only begun to explore the integration of Subsaharan African motifs and patterns observed with design ideas and approaches that I, as a North American textile designer, am familiar with. I hope to continue to develop my designs so that the imagery becomes not only more expressive on a formal level, but increasingly expressive of my life experiences and thoughts. I may begin to investigate the expressive aspect of the textiles I would produce through the use of the spatial divisions as a means of producing narratives and by incorporating personal imagery and arrangements into the textile designs as entities that represent the subjects and activities that take place within the narrative.

Concluding Remarks

The purpose of this thesis study was to use West African starch paste resist textile production techniques and Subsaharan African imagery as reference materials for the design and production of a collection of contemporary textiles. During the preparatory stages of the research project I conducted a visual and textual review of research that uses cross-cultural sources and specifically African sources of visual and textual information for the production of contemporary textile designs. I examined a range of West African textile production techniques and designs including resisted textiles, hand painted textiles, and printed textiles.

Following the examination of West African textile design processes I selected starch paste resist techniques and indigo as media for investigation. The investigation of these media along with Subsaharan African imagery culminated in the production of a collection of thirteen textiles and this thesis which documents the technical and visual development of the textile collection.

The textile collection has been defined technically, through the handpainted application of starch paste resist on cotton dyed in indigo and visually, through the selection, reconstruction, and arrangement of geometric Subsaharan African motifs and patterns within rectangular and square formats. Visually, the textile collection illustrates the progression of personal design ideas that relate to the division of space within the formats selected; the use of scale, variation of motif, and counter-change, as means of creating unexpected elements; and the introduction of three dimensional illusions. In this way, my textile collection and thesis visually and textually demonstrates the integration of Subsaharan African design information with my personal design ideas and approaches.

As a result of the research processes I have engaged in, future design investigations might be undertaken with respect to the adaptation of starch paste resisted designs for textiles intended for the commercial market. I might also choose to investigate the use of stencilled and carved starch paste resist techniques and Japanese starch paste resist techniques as means of broadening my design potential within the medium.

My research is offered as an example of how one contemporary North American textile designer has approached the use of African textile arts and other crafts as sources of visual and technical design information. Perhaps textile designers working within the North American studio setting will find value in both the technical and visual information I have provided and create their own textiles and research processes.

REFERENCES

Primary Sources

Maguire, K.L. personal collection of artifacts and photographic images.

Artifacts from the Clothing & Textiles Collection, Department of Human Ecology, University of Alberta:

Accession Number	Object Name, Origin	Decorative Technique
UA 76.23.1	Overblouse, Sierra Leone	tie-dyed
UA 76.23.2	cloth, Sierra Leone	tie-dyed
UA 76.23.3	cloth, Sierra Leone	tie-dyed
UA 80.1.2	cloth, Cameroon	raffia stitch resisted
UA 80.1.4	cloth, Ghana	adinkra, printed
UA 84.7.11	cloth	mud cloth (Bokolanfini), hand painted
UA 88.8.3	cloth	Senufo hand painted
UA 88.8.5a	wrap, Senegal	tie-dyed
UA 88.8.5b	headcloth, Senegal	tie-dyed
UA 88.8.15	cloth, Ghana	adinkra, printed
UA 88.8.16	cloth, Ghana	adinkra, printed
UA 88.8.17	cloth, Ghana	adinkra, printed
UA 88.8.18	cloth, Burkina Faso	tie-dye
UA 88.8.22	cloth, Ibadan Nigeria	hand painted starch paste resist, adire eleko
UA 91.16.29	cloth, Nigeria	adire eleso, stitch resisted
UA 91.16.30	cloth, Nigeria	adire eleso, stitch resisted

Accession Number	Object Name, Origin	Decorative Technique
UA 91.16.31	cloth, Nigeria	adire eleko, stencilled starch paste resist
UA 91.16.32	cloth, Nigeria	adire eleko, stencilled starch paste resist
UA 94.28.39	cloth, Nigeria	adire eleko, stencilled starch paste resist

Secondary Sources

Adams, M. (1989). Beyond symmetry in Middle African design. African Arts, 23(1), 34-43.

Akpata, B. (1971). Comments on adire in Western Nigeria. In Barbour, J. & Simmonds, D. (Eds.), Adire cloth in Nigeria.. Ibadan, Nigeria: The Institute of African Studies, University of Ibadan.

American Home Economics Association (1959). New Directions: A Statement of Philosophy and Objectives.

Aronson, L. (1975). Designing women of West Africa. Natural History, 84(1), 52-59.

Barbour, J. (1970). Nigerian adire cloths. Baessler-Archive, 18, 364-420.

Barbour, J. (1971). The origin of some adire designs. In J. Barbour & D. Simmonds (Eds.), Adire cloth in Nigeria (pp. 49-80). Ibadan, Nigeria: The Institute of African Studies, University of Ibadan.

Barkley, S. (1980). Adire: Indigo cloth of Nigeria. Toronto: The Museum for Textiles.

Baudoin, M.C. (1984). The use of African designs and techniques for contemporary fabrics. Unpublished master's thesis, Auburn University, Auburn, Alabama.

Brooks, L. (1971, August). Workshop: Adire eleko. Craft Horizons, pp. 12-15.

Cannizzo, J. (1983). Gara cloth by Senesse Tarawallie. African Arts, 16(4), 60-64, 88.

Cao, N. (1994). Miao textiles as inspiration for textile design. Unpublished master's thesis, University of Alberta, Edmonton.

Cole, H.M. & Aniakor, C.C. (1984). Igbo arts: Community and cosmos. Los Angeles: Museum of Cultural History, University of California.

Dendel, E.W. (1974). African fabric crafts. New York: Taplinger.

Eicher, J.B. (1976). Nigerian handcrafted textiles. Ile Ife, Nigeria: University of Ife.

Fagg, W. (1980). Yoruba beadwork: Art of Nigeria. New York: Rizzoli.

Faris, J.C. (1972). Nuba personal art. London: Duckworth.

Fisher, A. (1984). Africa adorned. London: Collins Harvill.

Fisher, R. & Wolfthal, D. (1987). Textile print design. New York: Fairchild.

Fu, M.W. (1970). Creative visual directions for contemporary design based on Chinese motifs. Unpublished master's thesis, University of Washington, Seattle.

Harris, J. (1993). Textiles: 5,000 years. New York: Harry N. Abrams

Hester, G.A. (1970). Hopi textile designs in modern fabrics. Unpublished master's thesis, Colorado State University, Fort Collins.

Idiens, D. (1980). An introduction to traditional African weaving and textiles. Textile History. 11, 5-21.

Joseph, M.B. (1978). West African indigo cloth. African Arts, 11(2), 34-37.

Joyce, C. (1993). Textile design. New York: Watson-Guptill.

Kennedy, J. (1971). New heirs to talent in Oshogbo. African Arts, 4, 24-27.

Kent, K.P. (1971). West African Cloth. Denver: Denver Museum of Natural History.

Kessler, C. (1984, November/December). An African artist in a dying trade. Fiberarts, pp. 51-53.

Larsen, J.L. (1976). The dyer's art: Ikat, batik, plangi. New York: Van Nostrand Reinhold.

Liles, J.N. (1990). The art and craft of natural dyeing: Traditional recipes for modern use. Knoxville, Tennessee: The University of Tennessee.

McHaffey, M.C. (1954). Traditional motifs in modern textile design. Unpublished master's thesis, University of Alberta, Edmonton.

Meurant, G. (1986). Shoowa design: African textiles from the kingdom of Kuba. London: Thames and Hudson.

Muc, L. (1989). Applied decorative design on handwoven cloth inspired by the textiles of Sumatra, Indonesia. Unpublished master's thesis, University of Alberta, Edmonton.

Nelson, G. (1965). Problems of design (2nd ed.). New York: Whitney Publications.

New works: Mary Ann Jordan. (1989, January/February). Fiberarts p.16.

Newman, T.R. (1974). Contemporary African arts and crafts. New York: Crown.

Nike Olaniyi Davies (n.d.) Oshogbo, Nigeria: Nike Center for Art & Culture.

Pacey, P. (1992). 'Anyone designing anything?' Non-professional designers and the history of design. Journal of Design History, 5, 217-225.

PC Globe Maps `n' Facts [Computer Software]. (1993). Novato, CA: Brøderbund Software

Perrone, J. (1993, September/October). In support of hybrids - Finding inspiration in other cultures. Fiberarts, p. 9.

Picton, J. & Mack, J. (1989). African textiles. London: British Museum.

Polakoff, C. (1980). Into indigo. Garden City, New York: Anchor Books

Potter, N. (1980). What is a designer: Things, places, messages (3rd ed.). London: Hyphen Press.

Proctor, R.M. & Lew, J.F. (1984). Surface design for fabric. Seattle: University of Washington Press.

Sandberg, G. (1989). Indigo textiles: Technique and history. London: A & C Black.

Scott, V. (1983). Nike Olaniyi. African Arts, 16(2), 46-47.

Sieber, R. (1972). African textiles and decorative arts. New York: The Museum of Modern Art.

Singh, S.K. (1989). Textiles from Gujarat and their adaptations. Unpublished master's thesis. University of Alberta, Edmonton.

Smith, F.T. & Eicher, J.B. (1982). The systematic study of African dress and textiles. African Arts, 15(3), 28.

Sokolov, J. (1991). Textile designs: Ideas and applications. New York: PBC International

Stanfield, N. (1971). Dyeing methods in Western Nigeria. In J. Barbour & D. Simmonds (Eds.), Adire cloth in Nigeria (pp. 7-42). Ibadan, Nigeria: The Institute of African Studies, University of Ibadan.

Ulrich. G. (1986, September/October). A wealth of fibre: Nigeria's adire cloth. Fiberarts, pp. 39-41.

Von Oech, R. (1983). A whack on the side of the head: How to unlock your mind for innovation. New York: Warner Books.

Wahlman, M., and Chuta, E. (1979). Sierre Leone resist-dyed textiles. In J.M. Cordwell & R.A. Schwarz (Eds.). The fabrics of culture (pp. 447-476). The Hague: Mouton.

Weir, W.J. (1994). Indigo dyed shibori textiles: A contemporary interpretation. Unpublished master's thesis, University of Alberta, Edmonton.

Williams, G. (1971). African designs from traditional sources. New York: Dover Publications.

Yang, S. & Narasin, R.M. (1989). Textile art of Japan. Tokyo: Shufunotomo.

Zeisel, J. (1981). Inquiry by design: Tools for environment-behavior research. Monterey, California: Brooks/Cole.

APPENDIX A

Starch Paste Recipe

Ingredients

1/2 cup tapioca paste solution

2 tablespoons cassava starch

3 tablespoons of a combination of the following:

- corn starch
- rice flour
- gluten flour

1/2 teasponn alum

1/8 teaspoon copper sulfate

Method

Tapioca paste solution

Combine 3/4 cup tapioca with 3 cups of water and grind in a blender for one minute. Let rest for twenty-four hours. Blend again for three minutes. Store in the refrigerator and use as needed.

Starch paste

1. Dissolve dry flours and starches in 1/2 cup of cold water.
2. Combine the tapioca solution with dissolved flours and starches and add enough water to bring the total volume of the mixture to 2 cups.
3. Blend smooth, preferably in a blender.
4. Cook uncovered, in a double boiler, over medium heat, stirring constantly, for five minutes after the mixture has thickened and cleared.
5. Add alum and copper sulfate and mix thoroughly.

***Note. This starch paste recipe was obtained from Brooks (1971, pp.12,13).**

APPENDIX B

Indigo Vat Recipe (Green Vitriol-Lime Vat)

Preparation of the Stock Solution (intended for *c.* 8 quarts or 8 litres bath)

Ingredients

1. 2 tsp (10 g) indigo
   3 1/2 fl oz (100 ml) water at 140°F (60°C)
2. 8 tsp (40 g) burnt lime (calcium oxide)
   3 1/2 fl oz (100 ml) water at 77°F (25°C)
   11 fl oz (300 ml) water at 140°F (60°C)
3. 8 tsp (40 g) green vitriol (ferous sulphate)
   14 fl oz (400 ml) water at 140°F (60°C)

Method

1. The indigo is stirred into 3 1/2 fl oz (100 ml) of water at 140°F (60°C).
2. The burnt lime is slaked with 3 1/2 fl oz (100 ml) of water at 77°F (25°C). NB This generates considerable heat! Then it is diluted with 9 fl oz (300 ml) of water at 140°F (60°C); if using slaked lime (calcium hydroxide) this calls for about a third more of water.
3. The green vitriol (ferous sulphate) is dissolved in 14 fl oz (400 ml) of water at 140°F (60°C).

Solutions 1 and 2 are put together in a stainless steel vessel of about 2 quarts (2 litres) and then No. 3 solution (green vitriol) is added and the whole covered with a lid or plastic film. This stock solution is then kept at 122-140°F (50-60°C) in a water bath for 4-6 hours or overnight. It should be carefully stirred now and then, the covering being replaced on each occasion.

Preparation of the Blank Bath

Ingredients

1. 6 quarts (7 L) water at 68-75°F (20-24°C).
2. 2 tsp (10 g) burnt lime (calcium oxide)
   5 fl oz (150 ml) water at 95°F (35°C)
3. 2 tsp (10 g) green vitriol (ferous sulphate)
   5 fl oz (150 ml) water at 140°F (60°C)

Method

Before the stock solution is added to it, the blank bath must be sharpened with small quantities of lime and green vitriol.

1. The lime is slaked with 5 fl oz (150 ml) of water.
2. The green vitriol is dissolved in 5 fl oz (150 ml) of water.

The two solutions are added to the blank bath which is then left to stand for a couple of hours, before the stock solution is put into the bath.

Preparation of the Dye-bath

Carefully pour the stock solution into the blank bath. Stir and allow the bath to stand for a couple of hours, or overnight in the case of a largish bath. It has to be well covered with a lid or foil. Its temperature should be about 68-75°F (20-24°C).

***Note. This indigo vat recipe was obtained from Sandberg (1989, p. 157) and for the dyeing of the textiles that form the visual component of this thesis project, I have increased the quantity of indigo listed in this recipe by a factor of two.**